PUBLIC CONFIDENCE, DOWN THE DRAIN: THE FEDERAL ROLE IN ENSURING SAFE DRINKING WATER IN THE DISTRICT OF COLUMBIA

HEARING

BEFORE THE

COMMITTEE ON GOVERNMENT REFORM

HOUSE OF REPRESENTATIVES

ONE HUNDRED EIGHTH CONGRESS

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PUBLIC CONFIDENCE, DOWN THE DRAIN: THE FEDERAL ROLE IN ENSURING SAFE DRINKING WATER IN THE DISTRICT OF COLUMBIA

FRIDAY, MARCH 5, 2004

HOUSE OF REPRESENTATIVES,
COMMITTEE ON GOVERNMENT REFORM,
Washington, DC.

The committee met, pursuant to notice, at 10:02 a.m., in room 2154, Rayburn House Office Building, Hon. Tom Davis (chairman of the committee) presiding.

Present: Representatives Davis of Virginia; Tierney, Van Hollen, and Norton.

Also present: Mr. Moran of Virginia.

Staff present: Melissa Wojciak, staff director; David Marin, deputy staff director/director of communications; Keith Ausbrook, chief counsel; John Hunter, counsel; Robert Borden, senior counsel/parliamentarian; Drew Crockett, deputy director of communications; Teresa Austin, chief clerk; Brien Beattie, deputy clerk; Shalley Kim, professional staff member; Corinne Zaccagnini, chief information officer; Krista Boyd and Alexandra Teitz, minority counsels; Karen Lightfoot, minority communications director/senior policy advisor; Anna Laitin, minority communications and policy assistant; Earley Green, minority chief clerk; Jean Gosa, minority assistant clerk; and Cecelia Morton, minority office manager.

Chairman TOM DAVIS. Good morning. The Committee on Government Reform will come to order. And welcome to today's hearing entitled, "Public Confidence, Down the Drain: The Federal Role in Ensuring Safe Drinking Water in the District of Columbia."

As chairman of the House Committee on Government Reform with jurisdiction over the District of Columbia, I was deeply troubled by reports that thousands of District homes tested above the Federal action limit for lead contamination. In testing done last summer, water in two-thirds of the 6,118 homes tested exceeded the lead limit established by the Environmental Protection Agency and many had lead levels that far exceed that limit. As you know lead exposure can have serious, even deadly, health ramifications, especially for young children and pregnant women.

I am also concerned that the public has not been properly informed of the situation. When the District of Columbia Water and Sewer Authority [WASA], first learned of high lead test results, homeowners who were part of the samplings were notified of the initial findings, but the vast majority of homeowners who were not

sampled were not notified of potential risk. Clearly residents have not been receiving timely and complete information. This is unacceptable.

Residents are also getting mixed messages from inconsistent statements released by WASA. At the end of January, WASA recommended that residents whose water is contaminated flush cold water lines for 30 seconds to 1 minute before using water for drinking or cooking. By February 19th, District residents were told to flush their water for 10 minutes. Then on February 25th the D.C. Department of Health issued an advisory warning residents that all pregnant women and children under 6 years old should immediately stop drinking District water. People need to know if their water is safe, and if not, what is being done to make it safe and exactly what they should do in the interim.

The Safe Drinking Water Act established a mechanism to monitor and regulate the levels of contaminants in public water systems so that drinking water is safe for the consuming public. Under the act, EPA is charged with setting levels of specific contaminants and implementing a monitoring and remediation program.

Each public water system is also required to implement optimal corrosion control treatment measures, a requirement that is separate from the requirements relating to the level of contaminants. If a water system exceeds specific contaminant levels, the action level, it must engage in additional corrective measures. States generally have the responsibility for ensuring that water systems don't exceed the action levels and that water systems take corrective actions when appropriate. But in the District of Columbia, EPA has this responsibility.

Congress also gave EPA emergency authority to take action if a contaminant in drinking water may present an imminent and substantial endangerment to the health of persons. Under this authority EPA may order a water system to take such actions as may be necessary to protect the health of persons using the water system, including, as the statute expressly states, ordering that alternative water supplies be provided. EPA should not hesitate to exercise its authority if the facts warrant action.

Lead is a primary contaminant in drinking water. It can come from source water, water in the distribution system lines, and water in a customer's plumbing systems. In 1991 EPA set the action level for lead at 15 parts per billion. Lead remediation measures include additional and more frequent testing, public education, and even line replacement. But these measures may not reduce lead levels in the District of Columbia drinking water in the near future.

And there are many questions that remain to be answered: What took so long to inform District residents of the potential health risks? How can residents best protect themselves? What relief will residents expect to receive? Did the Federal Government exercise proper oversight over the District's drinking water? Is the current safe water drinking program adequate to ensure that the public actually has safe drinking water or does it need to be reformed?

I have to wonder if EPA was effective in its oversight of the District drinking water quality. One concern is that EPA allowed

WASA to use "flushed water" and not "first draw" water for testing in schools. First draw samples are taken as soon as the water is turned on. Flushed samples are taken after running for 10 minutes. Lead levels will usually be quite high in water that has sat overnight in a lead line from a street main to a house.

Out of 752 samples, taken only 8 samples tested above the 15 parts per billion threshold. But I can't help wonder if more schools are at risk because testing protocols that EPA requires for private homes were not followed by WASA while they tested the schools.

I am concerned about the potential magnitude of this public health crisis. It is worrisome that there is no comprehensive list of properties that exceed limits. The fact that we can't pinpoint the affected areas is also worrisome. This has an effect on whether people buy homes in the District. In addition, many people commute to work and visit the District.

We're on the verge of the tourist season in the Nation's Capital. What message are we sending to potential visitors from around the world if the water is unsafe to drink, and what impact will it have on our tourism industry here? What are Members of Congress supposed to tell the American people? Come to Washington but don't drink the water?

The U.S. Government is the biggest user of D.C. water. Even the White House and Pentagon tested their water. The problem of lead contamination is not only a concern for District residents. Just this week, Arlington County reported that it had found high levels of lead. Were these levels detected as a result of special testing? If so, why did these levels not show up in the routine testing required by EPA under the Safe Drinking Water Act?

Yesterday it was announced that Fairfax County would sample for lead exposure in 345 schools. I am concerned about the regional impact of the recent spike level of lead in water. We have to find out how widespread this problem is and we need to fix it.

Arlington, which gets its water from the Dalecarlia Water Treatment Plant in the District, first stated that the water was safe because the county didn't have lead pipes. Now officials are saying that the problem may be that the chemicals used to kill bacteria in the water may have a corrosive effect on pipes. We need to find out whether the root of the problem is the lead service lines or some other condition. If it's not the lead service lines alone, we have to ask whether replacing lead service lines is enough.

What we know for certain is that somewhere between the source and the spigot, something's going wrong. Arlington's results suggest that corrosion control may be more important than infrastructure. What we're seeing is that little changes in chemistry have a big impact. That's where the Federal role really comes under the spotlight. WASA doesn't make the water, per se, they just deliver it. Water chemistry is the responsibility of the EPA and the Army Corps, not WASA. And if it's water chemistry and not just lead pipes that are to blame, then we have to be concerned for all WASA customers, in D.C., Arlington, Falls Church and Fairfax County. Indeed as one of our witnesses will testify today, the spike in lead levels we've seen in our region is probably a signal that similar problems may exist in many other water systems nationwide. EPA and the Army Corps of Engineers need to determine

whether new chemicals used to treat water for bacteria have a corrosive effect on service lines.

I hope our witnesses will share with us their study findings. WASA, EPA, and the U.S. Corps of Engineers should promptly resolve this issue and introduce a lead buffering agent to reduce the reactivity of drinking water with lead in pipes, joints, and plumbing. We need to make sure that the treatment operations are working to protect the consumer and that we're not trading one bad thing for another. After all, that's why EPA and the Corps moved to chloramines in the first place, to avoid potentially harmful chemicals.

The purpose of this oversight hearing is to provide a forum for the committee to assess the coordinated actions of EPA which is responsible for public water supervision programs for the District, the Washington aqueduct of the Washington Corps of Engineers which treats the water supply by the District, and WASA which purchases the water from the aqueduct and distributes it to District residents. We also intend to explore whether the current safe drinking water program is adequate to assure safe drinking water for the consuming public or whether it needs to be changed.

We have a distinguished panel of witnesses before us. I look forward to hearing testimony from our witnesses. I thank them for being with us. I hope they will shed some light on this issue so we can move forward to ensure that all residents in the capital region have safe drinking water. We will hear from the Environmental Protection Agency, the Washington Aqueduct of the U.S. Army Corps of Engineers, the District of Columbia Water and Sewer Authority, the Natural Resources Defense Council, and professors from Johns Hopkins Bloomberg School of Public Health, and Virginia Polytechnic Institute and State University.

I might add, we are holding this hearing today at the request of the city of Washington which has called us and expressed their concern about the Federal role as well.

[The prepared statement of Chairman Tom Davis follows:]

Statement of Chairman Tom Davis
Committee on Government Reform Oversight Hearing
"Public Confidence, Down the Drain:
The Federal Role in Ensuring Safe Drinking Water in the District of Columbia"

Good morning. A quorum being present, the Committee on Government Reform will come to order. Welcome to today's hearing entitled "Public Confidence, Down the Drain: The Federal Role in Ensuring Safe Drinking Water in the District of Columbia."

As Chairman of the House Committee on Government Reform with jurisdiction over the District of Columbia, I was deeply troubled by reports that thousands of District homes tested above the federal action limit for lead contamination. In testing done last summer, water in two-thirds of the 6,118 homes tested exceeded the lead limit established by the Environmental Protection Agency (EPA) – and many had lead levels that *far* exceeded that limit. As you know, lead exposure can have serious, even deadly, health ramifications, especially for young children and pregnant women.

I am also concerned that the public has not been properly informed of the situation. When the District of Columbia Water and Sewer Authority (WASA) first learned of high lead test results, homeowners who were part of the sampling were notified of the initial findings, but the vast majority of homeowners who were not sampled were not notified of the potential risk. Clearly, residents have not been receiving timely and complete information. This is unacceptable.

Residents are also getting mixed messages from inconsistent statements released by WASA. At the end of January, WASA recommended that residents whose water is contaminated flush cold water lines for 30 seconds to one minute before using water for drinking or cooking. By February 19, District residents were told to flush the water for 10 minutes. Then, on February 25, the D.C. Department of Health issued an advisory warning residents that all pregnant women and children under six years old should immediately stop drinking District water. People need to know if their water is safe and, if not, what is being done to make it safe – and exactly what they should be doing in the interim.

The Safe Water Drinking Water Act established a mechanism to monitor and regulate the levels of contaminants in public water systems so that drinking water is safe for the consuming public. Under the Act, EPA is charged with setting levels of specific contaminants and implementing a monitoring and remediation program. Each public water system is also required to implement optimal corrosion control treatment measures, a requirement that is separate from the requirements relating to the level of contaminants. If a water system exceeds specific contaminant levels -- the "action level"-- it must engage in additional corrective measures. States generally have the responsibility for ensuring that water systems do not exceed the action levels and that water systems take corrective actions, when appropriate. But in the District of Columbia, EPA has this responsibility.

Congress also gave EPA emergency authority to take action if a contaminant in drinking water "may present an imminent and substantial endangerment to the health of persons." Under this authority, EPA may order a water system to take such actions "as may be necessary to protect the health of persons" using the water system, including, as the statute expressly states, ordering that alternative water supplies be provided. EPA should not hesitate to exercise its authority if the facts warrant action.

Lead is a primary contaminant in drinking water. It can come from source water, water in the distribution system lines, and water in customers' plumbing systems. In 1991, EPA set the action level for lead at 15 parts per billion. Lead remediation measures include additional and more frequent testing, public education, and line replacement. But these measures may not reduce lead levels in District of Columbia drinking water in the near future.

There are many questions that remain to be answered:

- What took so long to inform District residents of the potential health risk?
- How can residents best protect themselves?
- What relief will residents expect to receive?
- Did the federal government exercise proper oversight over the District's drinking water?
- Is the current safe water drinking program adequate to assure that the public actually has safe drinking water or does it need to be reformed?

I have to wonder if EPA was effective in its oversight over the District drinking water quality. One concern is that EPA allowed WASA to use "flushed water" and not "first draw" water for testing in schools. "First flush" samples are taken as soon as the water is turned on and "flushed" samples are taken after running water for 10 minutes. Lead levels will usually be quite high in water that has sat overnight in a lead line from a street main to a house. Out of 752 samples taken only 8 samples tested above the 15 parts per billion threshold. But I cannot help wonder if more schools are at risk because testing protocols that EPA requires for private homes were not followed by WASA while testing these schools.

I am concerned about the potential magnitude of this public health crisis. It is also worrisome that there is no comprehensive list of properties that exceeded limits – the fact that we cannot pinpoint the affected areas is worrisome. This has an effect on whether people buy homes in the District. In addition, many people commute to work and visit the District. We're on the verge of the tourist season in the nation's capital. What message are we sending to potential visitors from around the world if the water is unsafe to drink and what impact will it have on our tourism industry? What are Members of Congress supposed to tell the American people – come to Washington but don't drink the water? The U.S. government is the biggest user of D.C. water. Even the White House and Pentagon tested their water.

The problem of lead contamination is not only a concern for District residents. Just this week, Arlington County reported that it had found high levels of lead. Were these levels detected as a result of special testing? If so, why did these levels not show up in the routine testing required by EPA under the Safe Drinking Water Act? Yesterday, it was announced that Fairfax County will sample for lead exposure in 45 schools. I am concerned about the regional impact of the recent spike level of lead in water. We have to find out how widespread the problem is and fix it.

Arlington, which gets its water from Dalecarlia Water Treatment Plant in the District, first stated that the water was safe because the county did not have lead pipes. Now officials are saying that the problem may be that chemicals used to kill bacteria in the water may have a corrosive effect on lead pipes. We need to find out whether the root of the problem is the lead service lines or some other condition. If it is not the lead service lines alone, we have to ask whether replacing lead service lines is enough.

What we know for certain is that somewhere between the source and the spigot, something's going wrong. Arlington's results suggest that corrosion control may be more important than infrastructure. What we're seeing is that little changes in chemistry can have a big impact. And here's where the federal role really comes under the spotlight. WASA doesn't make the water, per se; they just deliver it. Water chemistry is the responsibility of EPA and the Army Corps, not WASA.

And if it's water chemistry and not just lead pipes that are to blame, then we have to be concerned for all WASA customers – in D.C., Arlington, Falls Church, and Fairfax County. Indeed, as one of our witnesses will testify today, the spike in lead levels we've seen in our region is "probably a signal that similar problems may exist in many other water systems nationwide."

EPA and the Army Corps of Engineers need to determine whether new chemicals used to treat water for bacteria have a corrosive effect on service lines. I hope our witnesses will share with us their study findings. WASA, EPA, and the U.S. Corps of Engineers should promptly resolve this issue and introduce a lead buffering agent to reduce the reactivity of drinking water with lead in pipes, joints, and plumbing. We need to make sure that the treatment operations are working to protect the consumer and that we're not trading one bad thing for another. After all, that's why EPA and the Corps moved to chloramines in the first place – to avoid potentially harmful chemicals.

The purpose of this oversight hearing is to provide a forum for the Committee to assess the coordinated actions of EPA, which is responsible for the Public Water System Supervision Program for the District, the Washington Aqueduct of the U.S. Army Corps of Engineers, which treats the water supplied to the District, and WASA, which purchases the water from the Aqueduct and distributes it to District residents. We also intend to explore whether the current Safe Drinking Water program is adequate to assure safe drinking water for the consuming public or whether it needs to be changed.

We have a distinguished panel of witnesses before us. I look forward to hearing testimony from our witnesses and hope they will shed light on this issue so we can move forward to assure that all residents in the capital region have safe drinking water. We will hear from the Environmental Protection Agency, the U.S. Army Corps of Engineers Washington Aqueduct, the District of Columbia Water and Sewer Authority, the Natural Resources Defense Council, and professors from the Johns Hopkins Bloomberg School of Public Health and Virginia Polytechnic Institute and State University.

Chairman TOM DAVIS. I will now recognize Ms. Norton for any opening statement she may wish to make. Ms. Norton.

Ms. NORTON. Thank you very much, Mr. Chairman, for holding today's hearing which became clear to me that we needed the moment I was briefed by the EPA on this, the condition of our water. This hearing on lead and the region's water is the most important hearing we've had this entire session. The stakes for 1 million residents in the District of Columbia and Virginia could not be higher. However, the direct implications for jurisdictions throughout the country are already apparent even in what we have learned thus far about the D.C. Water and Sewer Authority crisis, about the Environmental Protection Agency regulations and monitoring, and about the Corps of Engineers' practices in purifying the water here.

Although Washington is the political capital in the midst of a political season, people here wake up looking not for the latest poll or primary results first, but for the day's tally on lead in the water. What is most troubling about what has occurred is that, one, mistakes in judgment and procedure were apparently made at every important juncture, as those involved now concede; and, two, any one of the three agencies could have caught the problem much earlier. All deferred to one another, creating an appearance of collusion or suppression of information.

The response that there was no intention may well be true, but it may not be sufficient to restore the confidence of the public and the Congress in the D.C. Water and Sewer Authority, EPA, and the Corps of Engineers' aqueduct operation. Therefore, this hearing must be primarily concerned with the measures all three must take to restore the needed confidence so that residents, commuters, and visitors will not need to ask the question they typically ask when they visit a developing country; namely, is it safe to drink the water here?

Beginning in 1996, WASA recreated itself from top to bottom. I have witnessed a vast improvement in the agency and have been pleased with what can only be called its complete transformation, even resurrection. I truly regret that WASA has allowed its new reputation to be severely tarnished. Far more important to the public than WASA's structural changes, and even its new good investment bond rating, is whether the end product, our water, is safe.

However, I am even more concerned about the actions of the responsible Federal agencies. The EPA plays a more important role in safeguarding drinking water here than in any jurisdiction except Wyoming, because EPA is in effect both the State and the Federal environmental monitor. Thus, when EPA fails here, it fails twice. There is no further watchdog, as when a State fails in its environmental policing, because here EPA is charged with total responsibility for our water. With the Nation's official lead environmental agency giving unique, direct oversight of our local water, one would suppose that ours would be the safest water in the country. Who can believe that now?

The Washington aqueduct was built more than 100 years ago by the Army Corps of Engineers to provide our water and has been run by the Corps ever since. We are totally dependent on the Corps' judgment concerning what goes into our water, subject, of course, to EPA regulations. Here is where the plot thickens. Were

each of the three agencies playing their statutory roles, tantamount to a check and balances system, or was the WASA-EPA aqueduct connection a closed circle where each simply reinforced one another or acted as enablers?

Of the many issues raised by today's hearing, three appear to be overarching: First, are EPA's science and regulations simply wrong? For example, how can the public know that its water is safe when the EPA allows WASA and other water systems to keep sampling once they discover high lead water levels until they dilute the harmful findings? Even then, how can EPA justify the most significant remediation it requires, namely, the replacement of lead service lines in homes, when now lead has been found in homes with lead, copper, and brass lines? Has the EPA ignored the best science available to the Agency?

Second, has the main focus thus far on service lines in older homes been wrong? At the EPA briefing I had, it was not long before I wondered whether the switch from chlorine to chloramines had caused lead to leach from the pipes. When sometimes even more lead appeared in some homes after service lines were replaced and lead was found in the water in newer homes, this hypothesis became even stronger. If so, we have two problems: dangerous lead lines, and corrosivity of lead from chloramines that could be affecting all of us. What was the Washington Aqueduct thinking when it switched purifying chemicals; and did the Corps know what it was doing?

Third, what is the appropriate public health response when lead is found in water? From the failure to follow regulations requiring public notification until today, all three agencies have seemed to be making it up or devising remedies as they go along. The result is a dangerously confused public. If nothing else comes from this hearing, I believe the public must know what to do until the problem is fixed. For example, filters that screen only up to 20,000 parts per million could hardly work when much higher levels have already been found.

In 1993 I remember clearly, in the first of a less serious water scare, EPA used its emergency authority under section 1431 of the Safe Drinking Water Act. This authority gives EPA broad power to take whatever actions are necessary to protect public health. When EPA used its emergency powers in 1993, it knew what to order. Today, however, EPA itself has become part of the problem, calling into question whether it can also be part of the solution.

Nevertheless, the Agency cannot ignore its mandated statutory charge. Given the obvious confusion, the three agencies appear yet to have defined the problem and its causes, much less the solution. At the very least, however, the public must get valid, coherent instructions concerning what to do while the three agencies are figuring it out. Particularly those in vulnerable populations or of low or modest income must get the assistance required to ensure their drinking water is safe. If something less than the use of EPA's emergency powers is in order in a crisis of this magnitude, I will need to hear the alternatives spelled out this morning.

I thank today's witnesses for their testimony and look forward to hearing from them. And I thank you again, Mr. Chairman.

Chairman TOM DAVIS. Thank you.

[The prepared statement of Hon. Eleanor Holmes Norton follows:]

ELEANOR HOLMES NORTON
DISTRICT OF COLUMBIA

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*COVERS D.C. ISSUES

Statement of Congresswoman Eleanor Holmes Norton
Committee on Government Reform
"Public Confidence, Down the Drain: The Federal Role in Ensuring Safe Drinking Water in the District"

March 5, 2004

Thank you Mr. Chairman for holding today's hearing on lead in the region's water. The stakes for one million residents in the District of Columbia and Virginia could not be higher. However, the direct implications for jurisdictions throughout the country are already apparent, even in what we have learned thus far about the D.C. Water and Sewer Authority crisis, about Environmental Protection Agency regulations and monitoring, and about the Corps of Engineers' practices in purifying the water here. Although Washington is the political capital in the midst of a political season, people here wake up looking not for the latest poll or primary results but for the day's tally of lead in the water. What is most troubling about what has occurred is that, 1) mistakes in judgment and procedure were apparently made at every important juncture, as those involved now concede, and 2) any one of the three agencies could have caught the problem much earlier. All deferred to one another, creating an appearance of collusion and suppression of information. The response that there was no such intention may well be true, but it will not be sufficient to restore the confidence of the public and the Congress in the D.C. Water and Sewer Authority, EPA and the Army Corps of Engineers Aqueduct operation. Therefore, this hearing must be primarily concerned with the measures all three must take to restore the needed confidence so that residents, commuters and visitors will not need to ask the question they typically ask when they visit a developing country, namely, "Is the water safe to drink here?"

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EPA used its emergency powers in 1993, it knew what to order. Today, however, EPA itself has become part of the problem, calling into question whether it can also be part of the solution. Nevertheless the agency cannot ignore its mandated statutory charge. Given the obvious confusion, the three agencies appear yet to have defined the problem and its causes, much less the solution. At the very least, however, the public must get valid, coherent instructions concerning what to do while the three agencies are figuring it out. Particularly those in vulnerable populations or are of low or modest income must get the assistance required to assure their drinking water is safe. If something less than the use of EPA's emergency powers is in order in a crisis of this magnitude, I will need to hear the alternative spelled out this morning.

I thank today's witnesses for their testimony and look forward to hearing from them.

Chairman TOM DAVIS. I ask unanimous consent that representative Jim Moran, a former member of this committee, be allowed to sit as part of the full committee today. Mr. Moran, your district is impacted on this. Would you like to make an opening statement?

Mr. MORAN. Thank you. My constituents thank you for having this hearing in such a timely and forthright manner with exactly the people that we need to be talking with. We're not here, obviously, to point any finger of personal blame at any of you. In fact, I know that the head of the water responsibilities at the Environmental Protection Agency lives in Arlington. The last thing he'd want is to endanger his children because of the poor quality of water.

All of you we understand are as empathetic as we are in getting to the bottom of this. But we have a very serious problem. Something is seriously wrong. And I assume the public knows why we are attaching as much importance to this as we are. But just to reiterate what all of the witnesses know, lead is a very serious toxic element when it gets into the body. It interferes with our red blood cell chemistry. Depending upon the length and level of exposure, it can delay the physical and mental development of children. It causes deficits in the attention span, in hearing and the learning abilities of children. And in adults it can lead to strokes, kidney disease, and cancer.

We know that we have to keep lead as much as possible out of the human body and certainly in the quantities that it has been entering through our water supply. We have a level of 15 parts per billion that is allowable. And we found in the District of Columbia that 157 just of the homes that were tested have lead levels in excess of 300 parts per billion, which is rare. So we need to know how did it get in, how we can get it out, and how we can alert the public much sooner than they have been alerted.

As Eleanor said, she has the most people impacted. I have several hundred thousand in northern Virginia, Arlington County, Falls Church, parts of Fairfax County that I share with Chairman Davis, drink this water. We thought, as Chairman Davis said, it wasn't a problem in Arlington because it was coming from lead service lines. Not so. They tested eight random samples and, of the eight, five were substantially in excess of the allowable amount of lead in water.

Now they're having to test all 22 elementary schools. Arlington County is taking this very seriously. This is a full court press in Arlington County. I have talked with the Arlington County Board and they're applying every possible resource to addressing this. I know the Chair of the Arlington County Board is here. Likewise in Falls Church.

Our local governments are doing everything they can. We may find that part of this is inadequate investment in the water infrastructure, particularly within our capital city, and that's not something that I think the D.C. residents should have to pay for. But certainly we have some Federal responsibility, particularly given the unique situation where the Federal Government is responsible for the capital city's water supply.

We're going to get into the specifics of what happened and hopefully find out why, and then lead to some, hopefully, consensus on what we can do about it now. We appreciate all of the witnesses.

And, Chairman Davis, let me conclude where I began by thanking you for having this very important and timely hearing.

Chairman TOM DAVIS. Thank you very much.

Any other members wish to make opening statements? The gentleman from Massachusetts, Mr. Tierney.

Mr. TIERNEY. Thank you, Mr. Chairman. Thank you for having this timely hearing. I want to say, I appreciate the witnesses for being here to help us work through this. I won't repeat what the previous people have said but I will put an emphasis on what I think is a concern here. When did people learn that this was an issue of the magnitude that we now confront and why wasn't the public told about it sooner? That is a concern for me. It seems to me to be a part of a path that is seen here sometimes with the EPA, whether it's the World Trade Towers, that the public doesn't get the information it should. Even if you don't know what the remedy is at a given time, why hasn't the public been allowed to know there is a problem so they can at least act on their own behalf?

Second, why wasn't there more aggressive EPA action? Is the EPA going to use its emergency powers and, if not, why not? What is being done on that? We have a lot of people that are obviously impacted by this and some serious concerns. Mr. Chairman, we look forward to getting to the bottom of this and working with the witnesses to do that.

Chairman TOM DAVIS. Mr. Van Hollen.

Mr. VAN HOLLEN. Thank you, Mr. Chairman. I'll be brief because much has already been said. I want to thank you for holding this timely and important hearing. What I would like to do is to get to the bottom of the question of exactly what agencies are responsible for what, to start with. Because reading the press and other coverage of this, there seems to be a bit of—and talking to people involved, there is a little bit of fingerpointing going on, saying it's the other guy's responsibility and not ours. And the results have been a failure for the consumer and the public as things fall through the cracks.

The second is, given whatever responsibility an agency has, what information did they have and when did they have it and, more importantly, what actions did they take or did they not take in response to that information.

And, finally, in addition to trying to figure out what happened and what went wrong in this case, obviously we are trying to figure out lessons to be learned both for the District of Columbia and the surrounding region, possibly for the entire Nation. I want to explore the question of whether or not D.C. is a canary in the coal mine, whether or not this could be the first indication of a much larger problem across the Nation.

So thank you, Mr. Chairman for holding this hearing and look forward to the testimony.

Chairman TOM DAVIS. Thank you.

I appreciate our panel being with us through the opening statements. We're going to move to our first panel now. Testifying on

the first panel we have the Honorable Benjamin H. Grumbles, the Acting Assistant Administrator for the Environmental Protection Agency Office of Water; Mr. Donald Welsh, the Regional Administrator, Environmental Protection Agency Region III; Mr. Thomas P. Jacobus, the general manager of the Washington Aqueduct, U.S. Army Corps of Engineers. We have Glenn Gerstell, the chairman of the District of Columbia Water and Sewer Authority. I understand you're accompanied by Jerry Johnson and Michael Marcotte. Is that right? We'll swear them in, too. It's our policy we swear witnesses in before their testimony so if you would rise with me and raise your right hands.

[Witnesses sworn.]

Chairman TOM DAVIS. Mr. Grumbles, why don't we start with you? We have your entire testimony as part of the record. We've read that, presumably, and we have questions off the entire testimony, which is part of the record, but we have a light in front of you. We try to give you 5 minutes to sum that up and make your points. When it turns orange, 4 minutes are up. When it turns red, 5 minutes are up. If you could move to summarize, then, try to keep us within time. But why don't we start with you? Thank you very much for being here.

STATEMENTS OF BENJAMIN GRUMBLES, ACTING ASSISTANT ADMINISTRATOR, OFFICE OF WATER, ENVIRONMENTAL PROTECTION AGENCY; DONALD S. WELSH, REGIONAL ADMINISTRATOR, ENVIRONMENTAL PROTECTION AGENCY REGION III; THOMAS P. JACOBUS, P.E., GENERAL MANAGER, WASHINGTON AQUEDUCT, ENVIRONMENTAL PROTECTION AGENCY; GLENN S. GERSTELL, CHAIRMAN, DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY, ACCOMPANIED BY JERRY N. JOHNSON, GENERAL MANAGER, AND MICHAEL S. MARCOTTE, P.E., DEE, CHIEF ENGINEER/DEPUTY MANAGER

Mr. GRUMBLES. Thank you, Mr. Chairman and Delegate Norton and members of the subcommittee and full committee. I'm Ben Grumbles, Acting Assistant Administrator for the Office of Water in EPA.

Mr. Chairman, you and others have a lot of tough questions, and so do we. We all want answers and we want action, and for EPA a top priority is to restore the quality of the drinking water and the confidence of the consumers in the region and the District.

I'm going to talk about lead as a health hazard, and lead in drinking water generally, talk a little bit about the regulatory framework, and then talk about what we're doing nationally as well as locally. And Donald Welsh, the Regional Administrator, will focus on specific actions and oversight and enforcement here in the District.

As has been stated by everyone so far, we all know that lead is an extremely serious public health concern. Too much in the body can cause brain damage, it can cause damage to the kidneys, liver, developmental systems. It's a real problem and EPA fully recognizes that.

Lead exposure in young children has been dramatically reduced over the last two decades. The decrease is largely due to the 1973 EPA regulation to phaseout lead in gasoline between 1973 and

1995 and to the reduction in the number of homes with lead-based paint from 64 million in 1990 to 38 million in 2000.

I just want to emphasize that as important as lead in drinking water is, as a public health threat, lead paint, the dust from lead-based paint is a higher and a very important concern. That's where most of the exposure is. But today, what this hearing is all about and what EPA is focused on is making sure that the lead in drinking water is not a problem and is not a national crisis. We're going to work as hard as we can with members of the committee and everyone else to ensure that.

Lead in drinking water amounts to approximately 20 percent of a person's exposure. In other words, the lead in a person, 20 percent comes from drinking water. EPA and Congress have taken a lot of steps over the last 20 years to reduce the lead in drinking water. The 1986 amendments to the Safe Drinking Water Act banned the use of lead solder, took other measures and steps as well. Specifically there is legislation, the Lead Contamination Control Act of 1988, which also focused on lead in schools and the lead-lined water reservoir tanks. In 1988 EPA proposed revisions to the existing standard of 50 parts per billion for lead in drinking water, and we issued a final lead and copper rule in 1991. That's the primary regulatory framework for the issues we're addressing today.

Unlike most contaminants, lead is not generally introduced to drinking water supplies from the source water. So while one of the EPA priorities is source water protection, when it comes to lead in drinking water, a key focus is beyond just source water protection; it's focusing on the lead pipes and it's focusing on the other aspects of the infrastructure. And, as has been stated by the panel, it's focusing on the corrosivity, the chemicals, the combination of chemicals in the water.

The rule basically requires systems to optimize corrosion control to prevent lead and copper from leaching into drinking water. The rule established an action level of 15 parts per billion for lead in drinking water. Systems must monitor a specific number of taps. If lead concentrations exceed that number in more than 10 percent of the taps sampled, then the system must undertake a number of additional actions to control corrosion and to inform the public about the steps they're taking.

Now, although we are currently seeing problems, serious problems in the District, the lead and copper rule has proven to be successful in reducing levels of lead in drinking water. In 100 large systems serving more than 25 million people across the Nation, there has been progress noted. Information reported by the States to EPA indicate that only four of the large systems, one of which is the District of Columbia, has exceeded the action level within the past 3 years. That's three—or four large systems.

The point is that while this is not a national crisis, it is a—it can be a local and regional crisis. It can be a manageable crisis. And it's one that we're very much focused on. And we're going to continue to investigate the matter in the weeks ahead as to how we responded.

I just want to summarize the things that EPA National Headquarters Office is doing. This is a reminder of things that we all as a Nation take for granted when we turn on the tap and are ex-

pecting a glass of clean safe water. I am instructing my staff to do several things, and this is a national guidance throughout the country. One of them is to work with enforcement and regional drinking water program managers to engage in a thorough review of compliance with the 1991 lead and copper rule, particularly focusing on large systems. The second thing that we're doing is focusing on lead in schools.

Now, based on the way the Safe Drinking Water Act is written, there is only so much the EPA can do in the regulatory role it has. But one thing we can do is to check throughout the country for what are the protocols and the guidance and what are the States and the local authorities doing with respect to lead. And we are doing that. And that's going to be a priority of the Office of Water.

I know that my time has run out. I want to mention two other things, Mr. Chairman, if I might. Then I will conclude.

We are currently planning to set up an independent review of the technical working group that is responding to the corrosivity issues. I know several citizens have said it would be good to have an independent panel to review what the technical working group is doing. And we are working on that. We think—we agree there needs to be some independent review of what the technical work group is doing.

The last thing, and perhaps one of the most important, is that EPA from a national perspective, is reviewing the lead and copper rule and we are reviewing the guidance to see whether or not the rule needs to be strengthened or modified. The important thing is to learn lessons from this experience and to work with everyone to make sure that the water quality is restored and the confidence in the drinking water quality is also restored.

I would like to now turn to Don Welsh who is the Regional Administrator, coming from the regional office of EPA.

[The prepared statement of Mr. Grumbles follows:]

STATEMENT OF
BENJAMIN GRUMBLES
ACTING ASSISTANT ADMINISTRATOR FOR WATER
AND
DONALD WELSH
ADMINISTRATOR, REGION III
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
COMMITTEE ON GOVERNMENT REFORM
UNITED STATES HOUSE OF REPRESENTATIVES

March 5, 2004

Good morning, Mr. Chairman and Members of the Committee. I am Benjamin Grumbles, Acting Assistant Administrator for Water at the United States Environmental Protection Agency (EPA). I welcome this opportunity to discuss the issue of lead in drinking water, the specific situation related to elevated lead levels in the District of Columbia's (D.C.'s) drinking water, and actions that EPA is taking at the local and national level to address the matter.

Lead as a Public Health Concern

Lead is a contaminant that EPA takes very seriously. This contaminant has been found to have serious health effects, particularly for children. Health effects may include delays in normal physical and mental development in infants and young children; slight deficits in the attention span hearing, and learning abilities of children; and, high blood pressure in some adults (which may lead to kidney disease and increased chance of stroke). But pregnant women and children are our primary concern. The Centers for Disease Control and

Prevention (CDC) has identified a blood lead level of 10 micrograms per deciliter as the level of concern for lead in children.

Lead exposure in young children has been dramatically reduced over the last two decades. According to a 2003 CDC report [Surveillance for Elevated Blood Lead Levels Among Children – United States, 1997–2001. Centers for Disease Control and Prevention. *Surveillance Summaries*, September 12, 2003. MMWR 2003:52 (No. SS-10)], 88% of children between the ages of 1 to 5 were estimated to have blood lead levels that exceeded 10 ug/dl for the period between 1976-1980. By 1999-2000, this estimate had decreased to approximately 2%. This decrease is largely due to the 1973 EPA regulation to phase out lead in gasoline between 1973 and 1995, and to the reduction in the number of homes with lead-based paint from 64 million in 1990 to 38 million in 2000. Some decline was also a result of EPA regulations reducing lead levels in drinking water and banning lead from paint. Other reasons include bans on lead in food and beverage containers and reductions in lead in industrial emissions, consumer goods, hazardous waste, and other sources. There are several EPA programs that continue to be successful in reducing the public's exposure to lead in the environment.

The most common source of lead exposure for children today is lead in paint in older housing and the contaminated dust and soil it generates. [see Risk Analysis to Support Standards for Lead in Paint, Dust and Soil (EPA 747-R-97-006, June 1998] This is primarily from housing built in the 1950s and homes with pre-

1978 paint. Several Federal programs and surveillance and prevention programs at the State and local level continue to work towards reducing exposure to lead. In addition, EPA works with Federal agencies – mainly the Departments of Housing and Urban Development, Health and Human Services, and Justice through the President's Task Force on Environmental Health Risks and Safety Risks to Children – on implementing a federal strategy to virtually eliminate childhood lead poisoning.

Lead in Drinking Water

Although the greatest risks are related to paint, lead in drinking water can also pose a risk to human health. As indicated in EPA's public education language for the Lead and Copper Rule, approximately 20% of a person's exposure to lead can come from drinking water. The level of exposure can be greater for children and infants, particularly when tap water is used to mix juices and formula. EPA has set a maximum contaminant level goal of zero for lead in drinking water and has taken several actions over the last 20 years to reduce lead in drinking water. The 1986 Amendments to the Safe Drinking Water Act (SDWA) effectively banned the new use of lead solder, and leaded pipes from public water supply systems and plumbing, and limited faucets and other brass plumbing components to no more than 8% lead. To address lead in schools, the Lead Contamination Control Act (LCCA) of 1988 recalled drinking water coolers

with lead-lined water reservoir tanks, and banned new drinking water coolers with lead parts. The 1986 SDWA Amendments also directed EPA to revise its regulations for lead and copper in drinking water.

An interim standard for lead in drinking water of 50 micrograms per liter, or parts per billion (ppb), had been established in 1975. Sampling of customer taps was not required to demonstrate compliance with this standard. In 1988, the Agency proposed revisions to the standard and eventually issued a final standard in 1991. The revised standard significantly changed the regulatory framework. Unlike most contaminants, lead is not generally introduced to drinking water supplies from the source water. The primary sources of lead in drinking water are from lead pipe, lead-based solder used to connect pipe in plumbing systems, and brass plumbing fixtures that contain lead. Setting a standard for water leaving the treatment plant fails to capture the extent of lead leaching in the distribution system and household plumbing.

EPA requires public water suppliers to meet the regulations governing treated water quality distributed via the public water system. The regulations do not require homeowners to replace their plumbing systems if they contain lead. To reduce consumers' lead exposure from tap water, EPA used its available authorities to require public water suppliers to treat their water to make it as non-corrosive as possible to metals in their customers' plumbing systems. These

treatment requirements were issued in EPA's Lead and Copper Rule (LCR) on June 7, 1991.

The rule requires systems to optimize corrosion control to prevent lead ahd copper from leaching into drinking water. Large systems serving more than 50,000 people were required to conduct studies of corrosion control and to install the State- approved optimal corrosion control treatment by January 1, 1997. Small and medium sized systems are required to optimize corrosion control when monitoring at the consumer taps shows action is necessary.

To assure corrosion control treatment technique requirements are effective in protecting public health, the rule also established an Action Level (AL) of 15 ppb for lead in drinking water. Systems are required to monitor a specific number of customer taps, according to the size of the system. If lead concentrations exceed 15 ppb in more than 10% of the taps sampled, the system must undertake a number of additional actions to control corrosion and to inform the public about steps they should take to protect their health. The rule was subsequently revised in 2000 to modify monitoring, reporting and public education requirements, but the basic framework, including the action level, was not changed.

The LCR has four main functions: (1) require water suppliers to optimize their treatment system to control corrosion in customers' plumbing; (2) determine tap water levels of lead and copper for customers who have lead service lines

or lead-based solder in their plumbing system; (3) rule out the source water as a source of significant lead levels; and, (4) if action levels are exceeded, require the suppliers to educate their customers about lead and suggest actions they can take to reduce their exposure to lead through public notices and public education programs. If a water system, after installing and optimizing corrosion control treatment, continues to fail to meet the lead action level, it must begin replacing the lead service lines under its ownership.

Although we are currently seeing problems in the District, the LCR has proven to be successful in reducing levels of lead in drinking water. Following issuance of the rule in 1991, EPA required medium and large systems to conduct initial rounds of monitoring by December 1992. The results showed that 819 of 7,500 systems serving more than 3,300 people exceeded the action level of 15 ppb, 100 of which served more than 50,000 people. These 100 large systems, which completed two rounds of monitoring by December 1992, served more than 25 million people across the nation. Information reported by States to EPA's Safe Drinking Water Information System indicate that only 4 large systems (one of which is D.C.), serving a total population of 1.1 million, had exceeded the action level within the past 3 years. The actions taken by systems to reduce corrosion through appropriate treatment have significantly reduced the public's exposure to lead in drinking water. However, even though we have had success in reducing exposure, we must remain vigilant to ensure that treatment continues

to control corrosion and that information on potential risks is communicated to the public.

The Current Situation in D.C.

In the District of Columbia, the regulatory framework that EPA established and with which the D.C. Water and Sewer Authority (WASA) sought to comply did not achieve its intended objectives. Within the last few years lead concentrations have increased significantly. Public education efforts were not effective in reaching the people who needed to know about the problem or in conveying the risks posed to some customers by elevated levels of lead in the water.

The provision of safe drinking water is not an easy task. Treatment processes must be balanced to address multiple risks. EPA has developed guidance to assist systems in achieving simultaneous compliance with different standards to, for example, balance treatment processes between the need to control corrosion within a system and also avoid harmful byproducts that can result from disinfection processes. As Regional Administrator Welsh will describe, EPA is working with WASA and the Washington Aqueduct, managed by the U.S. Army Corps of Engineers , which supplies water to WASA, to determine if changes in treatment processes to reduce disinfection byproducts resulted in elevated lead levels. The situation in D.C. appears to be unique. In surveying

States and regions, we have not identified a systemic problem of increasing lead concentrations in tap monitoring conducted by public water systems. However, we will continue to investigate this matter in the weeks ahead.

Actions Undertaken by EPA Headquarters

This event is a reminder of what we take for granted – that we can turn on our faucets, whenever we want, to draw a glass of clean, safe water. I also see it as indicative of the challenges in managing the nation's water infrastructure. We face the possibility of interruptions in service quality and public health protection as a result of deterioration of aging infrastructure or outdated components, such as the lead service lines serving older homes in the District. This will require significant levels of coordination on the part of local, State and Federal governments, and an understanding of the true investment needs on the part of customers. With respect to the specific issue of lead in drinking water, as the head of the national water program I am committed to taking a number of actions to address the matter from a national perspective.

I will be working with our enforcement and regional drinking water program managers to embark on a thorough review of compliance with the Lead and Copper Rule, with a particular focus on the systems serving populations greater than 3,300 people. States were required to report specific results of monitoring (i.e., 90th percentile lead levels) to EPA for these systems

beginning in 2002. I want to make sure that the information EPA has in its Safe Drinking Water Information System is both complete and accurate and will be working with the States to achieve this end.

All of us want to ensure that the nation's school children are not exposed to elevated lead levels in their drinking water. To that end, I have directed my staff to communicate with State drinking water program directors to determine the status of State and local efforts in monitoring lead in schools. While States and schools may have acted immediately to remove harmful lead lined coolers in accordance with the 1988 Lead Contamination Control Act, lead solder and plumbing fixtures can still contain low levels of lead. I want to ensure that States and schools continue to monitor their water outlets to ensure that children are protected using EPA's recommended protocol for testing water in schools for lead.

With respect to the situation here in D.C., I fully understand the concerns that City Leaders and members of Congress have with respect to the timeliness and effectiveness of notification for the public. Members of my own staff who reside in the District share your concerns and have made them known to me. There will be a accounting of the actions taken by all parties – WASA, the Army Corps of Engineers, and EPA 's regional office (in its role as primacy agency for the District). I want to ensure that we use the lessons learned to prevent such an event from taking place in the future – here in D.C. and in other communities

across the nation. I sense we will find that each party will be able to point to a moment in time when a question that went unasked would have shed full light on the extent of the problem. Staff from my program and EPA's Office of Research and Development are currently working closely with the Region to provide technical assistance. I have asked the program to identify a group of experts to conduct an independent review of the work underway by the group evaluating potential technical solutions to elevated lead levels. I have also asked my staff to work in consultation with enforcement and regional staff to review the existing requirements of the rule and associated guidance to determine whether it is appropriate to make changes as part of our review of existing regulations.

I want to stress that I believe that this whole event serves as an object lesson in the importance of communication – both within and between organizations and especially with the public. While I understand the importance of ensuring that information communicated to the public is accurate, we provide a disservice to the community by failing to communicate information in a timely manner. I believe the action taken by the District's Department of Health to recommend that pregnant women and children not consume unfiltered tap water or use it to prepare infant formula or concentrated juice until otherwise advised is a prudent cautionary move to take at this time. We are completing a thorough review of WASA's and the Aqueduct's activities to

determine if any violations of environmental law have occurred and to ensure public health is protected. EPA will take the appropriate steps to ensure that these agencies meet their responsibility to protect public health, both by enforcing existing regulations and by using its additional authorities to address imminent and substantial threats to public health, as appropriate.

I will now turn over the balance of my time to Donald Welsh, Administrator for our Region III office in Philadelphia. EPA's Region III office has primary enforcement responsibility for the District's drinking water program and oversight responsibility for WASA and the Aqueduct. He will provide you with a specific recounting of what has happened to date and will provide information on the actions underway to identify both the cause of elevated lead levels and potential solutions.

Region III Introduction

Mr. Chairman and Members of the Committee, my name is Don Welsh and I am the Regional Administrator for EPA's Region III. Thank you for the opportunity to testify this morning on the circumstances and events regarding the lead levels in the District of Columbia residents' tap water.

As noted, lead in the environment, whether in lead paint, in drinking water or any other avenue of exposure, poses significant risks to health– particularly to

pregnant women and young children. Reducing all sources of exposure to lead is vital to protecting the health of our citizens.

It is unacceptable to us that many families in the District, particularly those with young children and pregnant women, continue to live with fear and uncertainty over the quality of the water they drink. The citizens of Washington, D.C. demand and deserve much better.

It is clear that the D.C. Water and Sewer Authority, or WASA, was ineffective at informing the public about the magnitude of the problem of lead in drinking water or in conveying the steps families and individuals should take to protect themselves. Both the Regional and Headquarters offices of EPA are taking a critical look back at how the Region could have done a better job in its oversight of WASA. There will be lessons learned from our reviews which will benefit the Agency in the future. We are completing a thorough assessment of WASA's and the Aqueduct's activities to determine if any violations of environmental law may have occurred and to ensure public health is protected. If warranted, EPA will take an appropriate compliance and enforcement response to safeguard public health.

Our primary focus is on taking strong action with other agencies to help bring about solutions as quickly as possible to the current situation – both short term, in ensuring a safe water supply for families and improving outreach efforts, and longer term in finding and fixing the root cause of the problem.

The first priority is to ensure that citizens have safe water to drink. We have published consumer guidelines that should be followed by all residents to reduce their risk of exposure. These guidelines, which are attached to this testimony, prescribe longer tap water flushing periods for those with lead service lines. Additionally, as an extra level of safety, the District's Department of Health (D.C.DOH) recently recommended that pregnant women and children under six, those most susceptible to health effects from lead, not consume unfiltered tap water. We believe that this is a prudent and cautionary step to take at this time.

I met this week with City officials to discuss the City's plans for providing safe water to residents. We will closely monitor the steps being taken in this area. If affected residents are not promptly supplied with safe drinking water, we stand ready to exercise our authorities to compel action.

I would like briefly to address several issues raised by members and describe the specific actions we have underway to address them. I have also included a longer summary of LCR compliance in D.C. over the past several years as an attachment to this testimony.

EPA's Role in the District of Columbia

Two public water systems are responsible for complying with provisions of the LCR in the District. The Washington Aqueduct Division (Aqueduct) of the U.S.

Army Corps of Engineers owns and operates two water treatment plants which provide finished drinking water to the D.C. Water and Sewer Authority (WASA), as well as to Arlington County and the City of Falls Church in Virginia. The Aqueduct is responsible for all corrosion control treatment for its three customer systems. WASA, which distributes water from the Aqueduct to customers, is responsible for monitoring lead and copper at its retail customers' taps.

EPA's Region III office in Philadelphia has primary oversight and enforcement responsibility for public water systems in the District. The Region ensures that D.C.'s water suppliers know and understand Federal regulations, provides advice and technical assistance on how to comply with the Federal regulations, requires monitoring of the water and treatment processes according to the Federal regulations, and ensures that required results are reported. The region can also take an appropriate administrative or judicial enforcement action, including issuing notices of violation or administrative orders and seeking administrative and/or civil penalties.

As noted by Acting Assistant Administrator Grumbles, the goal of the LCR is to provide maximum human health protection by reducing lead levels at consumers' taps to as close to the maximum contaminant level goal of zero as is feasible. WASA and the Aqueduct are required to periodically report monitoring results and other process information to EPA on a regular basis. WASA is required to report: (1) results of routine tap monitoring within ten days after each

monitoring period ends (i.e., every six months or annually, depending on whether the system is on standard or reduced monitoring); (2) lead service line replacement program information annually; and, (3) documents that demonstrate that it complied with public education requirements within ten days after the period in which it is to complete those steps (i.e., every six months and annually, depending on the specific public education program element).

Effectiveness of Treatment

The results of D.C.'s required tap monitoring exceeded the 15 ppb action level at the 90th percentile for taps monitored during 6 out of 15 reporting periods since January 1992 – three times prior to 1994 and three times since 2002.

Because of the difficulties in removing all sources of lead from plumbing, the goal of the LCR is to minimize corrosion through appropriate treatment so that lead is not released into drinking water. During the 1990's several studies were conducted by WASA, the Aqueduct, and EPA to support identification of an optimal corrosion control treatment (OCCT) for the drinking water supplied by the Aqueduct. The studies investigated the potential of several different mechanisms by which to control pH and corrosion. Several of the studies initially recommended using a phosphate-based corrosion inhibitor, but reconsidered based on information that suggested that such a change could cause other water quality problems. EPA gave the Aqueduct conditional OCCT approval in

1997 and the Aqueduct began implementing the new corrosion control regime. EPA gave final approval of the OCCT in 2000, after reviewing results from several reports required by the 1997 conditional approval. Later that year, the Aqueduct replaced its secondary disinfection treatment by converting from free chlorine to chloramines. The primary purpose of this change was to ensure compliance with EPA's updated and more stringent requirements for disinfection byproducts.

The OCCT implemented by the Aqueduct appeared to be effective in minimizing lead levels until the reporting period between July 1, 2001 and June 30, 2002. EPA received a final report from WASA on August 27, 2002 indicating that the 90th percentile value had increased to 75 ppb during that period. The high level required that WASA conduct more frequent monitoring every six months. The lead action level was also exceeded for subsequent monitoring periods in 2003, with 90th percentile values of 40 ppb (January 1 to June 30, 2003) and 63 ppb (July 1 to December 31, 2003).

A problem with the treatment process is now suspected, and technical issues regarding the corrosivity of the water need to be resolved. As noted, in November 2000 the Aqueduct replaced its secondary disinfection treatment by converting from free chlorine to chloramines. Also, during 2001 and 2002, WASA initiated an extensive water meter replacement program with approximately 18,000 water meters replaced with new remote read capability units. Since the

elevated lead levels returned during this general time frame, there is a belief that these changes or others may have been related to increased corrosivity in the lead service lines. In 2003, EPA Region III worked through a Headquarters contractor to hire Professor Marc Edwards of Virginia Tech to help analyze the situation and make recommendations to assist the region in working with WASA. Professor Edwards' draft report delivered in October 2003 provided key input to the evaluation of the problem during the fall of 2003 and continues to aid the expert technical team convened by EPA to identify the underlying causes for elevated lead levels.

We are working with WASA, the Washington Aqueduct, and other outside technical experts to help determine the correct balance of treatment needed to both reduce corrosivity and maintain the optimum protection against other harmful contaminants that can be found in drinking water. The expert technical team has been researching these issues and will report preliminary recommendations to me by March 10. Under their current schedule, the working group is expecting to arrive at a preliminary water chemistry change decision by May 1 with a partial system test in an isolated section of D.C.'s distribution system to begin about June 1 followed by full system implementation about September 1.

Effectiveness of Lead Service Line Replacement Program

When WASA exceeded the action level, they were also required to develop and undertake a lead service line replacement (LSLR) program. The LCR requires that a system replace 7 percent of the lead service lines which the system owns each year until all of the lines have been replaced, or until tap water monitoring indicates that its 90th percentile lead level is equal to or less than 15 ppb. If the sample for a service line shows a concentration below the action level, the line serving that house is considered to be replaced for the purposes of meeting the 7 percent requirement. WASA has estimated that they have 23,000 lead service lines.

Starting in March 2003, WASA began an expanded lead service line sampling program to evaluate the lead concentrations leached into water from lead service lines using a protocol that differs from that used for required tap monitoring. The Region received detailed sampling results from this program on October 27, 2003. The information was reviewed by our technical staff with an eye towards determining how to address the underlying cause of the corrosion problem. The WASA LSLR report indicated that 385 lead service lines had been physically replaced and that an additional 1,241 lines were considered replaced because they had monitoring results below the 15 ppb action level. The report also indicated that 3,372 of 4,613 lead services lines tested through September 30, 2003 had lead levels that exceeded the lead action level. In

many cases, lead levels from customer taps served by lead service lines were very high, with nearly 3% of the samples above 300 ppb and 18.5% above 100 ppb. While homeowners who participated in the expanded sampling program were notified of the results, in many cases several months passed between when a sample was collected and information provided to a homeowner. This is a particular concern for homeowners with high lead levels in their water and EPA has notified WASA that it expects more timely notification of results to customers in the future.

We understand that, as of December 31, 2003, WASA has collected a cumulative total of about 6,000 lead service line water samples. Region III has requested that WASA report further lead service line testing results on a monthly basis rather than on an annual basis as specified in the regulations. The first report will provide all the lead service line replacement information going back to the beginning of the current compliance period that began October 1, 2003. For homes where WASA conducts a partial lead service line replacement, Region III has requested that WASA provide detailed flushing instructions to the resident so that they can take steps to minimize their exposure to very small lead particles dislodged during the replacement.

EPA completed its review of the WASA LSLR for 2002-2003 and will request WASA to submit a modified LSLR plan for 2003-2004 that will continue the expanded monitoring program and accelerate lead service line replacement.

Region III has stressed to WASA that the lead service lines, which are the major source of the high lead levels, need to be replaced. We expect to award funding in April, in the form of $8 million in FY 2004 grant funds and $3.7 million in prior year funds, to accelerate the replacement of these lines. EPA is also strongly encouraging WASA to physically replace lead service lines that test over 15 ppb rather than considering those lines that have results less than 15 ppb as replaced for the purposes of meeting the 7% replacement requirement.

Currently WASA only replaces that part of the lead service line under their control. However, partial replacement of lead service lines will not completely eliminate the high lead levels coming from the service line. EPA highly recommends that homeowners have their portion of the service line replaced when WASA replaces their portion. We understand the cost may be prohibitive for some homeowners and are exploring other, potentially cost-effective, options for assisting homeowners in dealing with this expense.

Effectiveness of Public Education

When the action level for lead in drinking water is exceeded, the goals of federal requirements are to ensure that the public is informed about potential risks and the steps they can take to minimize exposure. While WASA may have met requirements of the regulations, it did not meet the spirit -- which is focused on public right to know and robust communication. In its outreach efforts, WASA

did not fulfill its responsibility to effectively inform all impacted parties about a problem with their water. Notifications to individual residents were often not timely and did not achieve the goal of getting information to those who needed to know. Mass media tools were not used as effectively as they could have been. There should have been more widespread and urgent communication of the problem District-wide. Additional measures could have been taken by WASA and EPA to ensure that customers were quickly informed, and that public education and outreach materials reflected an appropriate level of concern.

In hindsight, it appears that EPA could have more quickly assessed the timeliness, effectiveness and impact of WASA's public notification program and promptly directed WASA to correct its deficiencies. We are auditing WASA's public information efforts to identify specific elements that failed and we have revised our oversight procedures to assure that shortcomings in public outreach are identified earlier and corrected. We are more closely monitoring WASA's activities to ensure that system-wide notices effectively inform customers about the lead risk and we will ensure that information provided in WASA's next Consumer Confidence Report to customers is clear with respect to information about lead levels in drinking water.

We are moving ahead with plans to work with citizens to get a better understanding of how WASA's outreach was received and how to improve it for the future. We are also taking our own actions to provide information to the

public. EPA continues to provide information on our Regional and National Web sites, through our National Safe Drinking Water Hotline, and through the media to help guide consumers.

On another front, we have initiated contact with the National Nursing Centers Consortium with the goal of establishing a new EPA-sponsored lead prevention program for the district. In addition, EPA and the Agency for Toxic Substances and Disease Registry have provided funding for the Pediatric Environmental Health Specialty Unit, which is offering important health information on lead in the D.C. community.

Conclusion

In closing, let me reiterate EPA's commitment to protect public health by identifying solutions to the lead problem in D.C. drinking water and ensuring that they are implemented quickly. We must learn from the past, but I am focused on working on strategies that will help us move forward in a positive way. To that end, I am directing WASA to:

- test all lead service lines in 2004;
- expedite notification to customers of the results of water sampling at their residences;
- convey the necessary sense of urgency in all of its communications with the public, and;
- accelerate physical replacement of lead service lines to the maximum extent possible

Working closely with our public service partners and concerned citizens, we will continue to aggressively investigate this matter in the weeks ahead to provide needed assistance, determine the exact nature of the problem we are facing, and implement an appropriate balanced solution. EPA will not be satisfied until all aspects of this problem are resolved and the citizens of D.C. can once again be confident in the safety of their drinking water.

Thank you for the opportunity to testify this morning. I am pleased to answer any questions you may have.

* * *

Attachment 1

Flushing Guidelines for D.C. Residents

Because the source of lead found in drinking water is from lead service lines or household plumbing, levels are highest after water has been sitting in the pipes for a period of 6 hours or more.

All District of Columbia consumers should:

- Use cold water for drinking or cooking, as hot water will contain higher levels of lead. Cold water should be heated on the stove for drinking or cooking.
- For homes with non-lead service lines, flush water lines that have not been used for 6 hours or more by running the cold water (flush) for 60 seconds prior to using the water from a faucet for drinking or cooking.
- Periodically remove and clean the strainer/aerator device on your faucet to remove debris.

In addition, if consumers believe they have a lead service line, the following actions should be taken:

- Draw water for drinking or cooking after another high water use activity such as bathing or washing your clothes so that a total of at least 10 minutes of flushing has occurred. (The large amount of water used will flush significant amounts of water from your home's pipes.)
- Flush the faucet from which drinking water will be drawn by running the cold water tap for 60 seconds prior to use.
- Collect drinking water in a clean container and store in the refrigerator for use during the day.

Children and pregnant women are most at risk of adverse health effects from lead in drinking water. In an abundance of caution at this time, the D.C. Department of Health is recommending that pregnant women, nursing mothers, and children under 6 years old who live in homes with lead service lines should not drink unfiltered tap water. Residents should not use tap water to mix baby formula and concentrated juices if the level of lead in their water exceeds 15 ppb or if they suspect they have a lead service line.

In homes where water tests have indicated elevated lead levels or which are suspected of having a lead service line, children or pregnant women should have their blood lead level screened to be sure they do not have elevated blood lead levels. The Department of Health provides information on how to have children screened for blood lead levels. The D.C. DOH can be reached by calling (202) 535-2626 or by visiting its web site (http://www.dchealth.dc.gov.). If a parent has additional concerns about a child's health, he or she should contact the child's pediatrician.

If consumers who are flushing water lines still have concerns about lead, they may want to consider switching to bottled water or purchasing a treatment device. Be sure to purchase a treatment device certified by an independent testing organization, such as NSF International. EPA does not certify or endorse home drinking water treatment devices. The NSF International website has

information about certified drinking water treatment units at http://www.nsf.org/Certified/DWTU.

A point-of-use (POU) device should be selected that will be used after potentially lead-leaching plumbing components. POU devices must be installed and operated according to manufacturers instructions.

Attachment 2

LCR Compliance History in D.C.

The results of D.C.'s required tap monitoring exceeded the 15 ppb action level during 6 out of 15 monitoring reporting periods since January 1992 - three times prior to 1994 and three times since 2002 (see Table 1). WASA's predecessor, the Water and Sewer Utility Administration (WASUA) was responsible for LCR monitoring prior to October 1, 1996.

Monitoring Period Start	Monitoring Period End	Lead (ppb) 90th percentile
January 1, 1992	June 30, 1992	**18**
July 1, 1992	December 31, 1992	**15**
January 1, 1993	June 30, 1993	11
July 1, 1993	December 31, 1993	**37**
January 1, 1994	June 30, 1994	14
July 1, 1994	December 31, 1994	12
January 1, 1997	June 30, 1997	6
July 1, 1997	December 31, 1997	8
July 1, 1998	December 31, 1998	7
January 1, 1999	June 30, 1999	5
July 1, 1999	June 30, 2000	12
July 1, 2000	June 30, 2001	8
July 1, 2001	June 30, 2002	**75**
January 1, 2003	June 30, 2003	**40**
July 1, 2003	December 31, 2003	**63**

Corrosion Control Investigations

During the mid-1990's several studies were conducted to support identification of an optimal corrosion control treatment (OCCT) for the drinking water supplied to the Aqueduct's three customer systems. As these studies were being conducted, D.C. underwent several periods of elevated total trihalomethane (disinfection byproducts) levels, and total coliform levels, the

latter of which resulted in violations of the Total Coliform Rule. These persistent events, which occurred between 1994-1996, delayed a final OCCT designation to allow for a consideration of impacts from these contaminants and appropriate treatment changes.

In 1993-1994, the Washington Aqueduct conducted and prepared a corrosion control study as required by the LCR. The study, conducted by ECG, Inc., recommended that pH control be utilized for OCCT and was submitted to Region III by the Aqueduct in June 1994 for review and designation of OCCT.

In 1995, at Region III's request, an EPA contractor (Wade Miller Associates) conducted a sanitary survey of the District's drinking water distribution system. The survey included an evaluation of the OCCT recommendation with regard to overall water quality. The contractor recommended that additional consideration be given to the use of a phosphate-based corrosion inhibitor to control corrosion, increase the effectiveness of the chlorine disinfectant, and reduce TTHM levels in the system. The contractor recommended that EPA not designate OCCT until more information was obtained about issues raised during the survey.

An administrative order (AO) issued against WASUA in July 1996 for repeated violations of the Total Coliform Rule included requirements for corrosion control treatment actions. When WASA began operation on October 1, 1996, it assumed the responsibility for compliance with the AO.

In 1996, Region III engaged Black and Veatch, Inc. to further study the effect of OCCT on the overall quality of the District's drinking water. While Black and Veatch initially believed that a phosphate-based corrosion inhibitor might be effective in D.C., the recommendation was revised because evidence had become available that the use of a phosphate-based corrosion inhibitor in a distribution system with predominately unlined cast iron pipes, such as the District's, might result in other water quality problems. Therefore, the contractor recommended that pH adjustment continue to be used to control corrosion but that efforts be made to maintain a high pH of the treated water .

On July 15, 1997, the EPA Region III Water Protection Division issued a conditional OCCT designation to the Aqueduct and WASA which directed that pH adjustment continue to be used for corrosion control. The OCCT designation was conditioned to require that the Aqueduct and WASA conduct additional studies to determine if alternative treatments could be made. During 1997-1998, the Aqueduct contracted with Malcolm Pirnie to evaluate potential treatment changes for pH adjustment and corrosion control. WASA conducted a study evaluating the impact of potential drinking water treatment changes on wastewater.

After reviewing additional information provided by the Aqueduct and WASA studies required by the conditional OCCT designation and AO, EPA

designated pH adjustment as the OCCT for the D.C. water system on February 29, 2000.

In November 2000, the Aqueduct replaced its secondary disinfection treatment by converting from free chlorine to chloramines. The primary purpose of this change was to ensure compliance with EPA's updated and more stringent requirements for disinfection byproducts.

WASA was not required to conduct lead monitoring in 1995 and 1996 because it was conducting its OCCT study. Lead levels in tap samples during three years worth of monitoring between 1997-1999 ranged from 8 - 12 ppb at the 90th percentile. The low levels allowed WASA to reduce its lead and copper tap monitoring from 100 to 50 samples per year.

The OCCT implemented by the Aqueduct appeared to be effective in minimizing lead levels until the period between July 1, 2001 - June 30, 2002. WASA was required to submit a report on results within 10 days of the end of the monitoring period. EPA received a final report from WASA on August 27, 2002 indicated that the 90th percentile value had increased to 75 ppb during that period.

Chronology of Recent Events

The action level exceedance for the period ending in June 2002 triggered provisions in the LCR that required WASA to complete the following actions:

- Resume full monitoring for lead and copper at the customers' taps by sampling a minimum of 100 customers taps during subsequent 6-month monitoring periods.

- Prepare and implement a public education program to advise consumers on how to protect themselves from exposure to lead in drinking water and inform them of steps that will be taken to reduce the lead level.

- Develop and undertake a lead service line replacement (LSLR) program. The Lead and Copper Rule requires that a system replace 7 percent of the lead service lines which the system owns each year until all of the lines have been replaced, or until tap water monitoring indicates that its 90th percentile lead level is equal or less than 15 ppb. If the sample for a service line shows a concentration below the action level, the line serving that house is considered to be replaced for the purposes of meeting the 7 percent requirement.

On January 1, 2003, WASA began a required tap sampling program with increased monitoring frequency and an increased number of sampling sites. The lead action level was exceeded for both monitoring periods in 2003, with 90th percentile values of 40 ppb (January 1 to June 30, 2003) and 63 ppb (July 1 to December 31, 2003).

Starting in March 2003, WASA began an expanded sampling program to evaluate the lead concentrations leached into water from lead service lines using a protocol that differed from that used for required tap monitoring. The Region did not receive the detailed sampling results from the lead service line testing program until October 27, 2003. This information was reviewed by our technical staff with an eye towards determining how to address the underlying cause of the corrosion problem.

On November 19, 2003, EPA Region III technical staff completed the initial review of the WASA LSLR report, which reported that WASA had physically replaced 385 lead service lines and that an additional 1,241 lines were considered replaced because they had monitoring results below the 15 ppb action level.. The report indicated that 3,372 of 4,613 lead services lines tested through September 30, 2003 had lead levels exceeding the action level. In many cases, lead levels were very high, with nearly 3% of lines above 300 ppb and 18.5% above 100 ppb. The LCR has no provision to address extremely high lead levels other than to include them in the schedule for replacement. EPA has completed its review of the WASA LSLR for 2002-2003 and will be requesting WASA to submit a modified LSLR plan for 2003-2004 that will continue the expanded monitoring program and accelerate lead service line replacement.

We understand that, as of December 31, 2003, WASA has collected a cumulative total of about 6,000 lead service line water samples. Region III has requested that WASA report further lead service line testing results on a monthly basis rather than on an annual basis as specified in the regulations. The first report will provide all the lead service line replacement information going back to the beginning of the current compliance period that began October 1, 2003. For homes where WASA conducts a partial lead service line replacement, Region III has requested that WASA provide detailed flushing instructions to the

resident so that they can take steps to minimize their exposure to very small lead particles dislodged during the replacement.

Public Notification of Lead Concerns

Once the Action Level for lead (15 ppb) was exceeded, WASA was required to do all of the following activities. The Region is conducting a thorough compliance review and audit of WASA's files to determine if it met all requirements.

- Annually, insert informational notices containing mandatory written language in each customer's water utility bill, along with a special alert on the face of the bill or on the envelope. Systems that do not bill monthly, as was the case with WASA in 2002, may use an alternate method of delivering this information to its entire service area. WASA delivered a public education information guide, "Living Lead-Free in D.C.," to all residents through the Washington Post delivery service and separately to all other addresses in the District in October 2002. In August 2003, the information was included in the "What's On Tap" newsletter delivered with water utility bills.

- Annually, submit all mandatory written language to major daily and weekly newspapers. WASA submitted this information to the Washington Post and the Washington Times in October 2002. However, WASA has yet not demonstrated that it delivered this information to major newspapers in 2003.

- Annually, deliver pamphlets and/or brochures to facilities and organizations that serve high risk populations, containing the mandatory language on the health effects of lead and steps that can be taken to reduce exposure to lead in drinking water. WASA delivered brochures to facilities and organizations such as schools, libraries, and clinics in November and December in 2002 and September 2003.

- Every six months, deliver Public Service Announcements (PSAs) containing mandatory language to at least five radio and five television stations with the largest broadcast audiences. WASA delivered PSAs to seven television stations and 19 radio stations in October 2002; and to five television stations and 14 radio stations in September 2003. However, WASA has not demonstrated that it issued PSAs at intervening 6-month milestones.

- WASA was also required to include the lead sampling results in its Annual Consumer Confidence Report (Water Quality Report). This was done in WASA's 2002 Water Quality Report, advertised in the Washington Post and delivered to District residences in June 2003.

WASA completed many of the substantive elements of public education required by our regulations: development and distribution of educational information on lead, public service announcements, and offering free sampling in response to any customer's request. WASA initiated and advertised a Lead Service Hotline and had informational materials on its web site. WASA created an incentive program, offering customers who were suspected to have lead service lines an incentive of $25 to have their water tested.

As long as WASA continues to exceed the lead Action Level, they must continue to perform public education and outreach. Looking forward, by August 2004 they must deliver public education materials to all customers and major television and radio broadcast outlets; and deliver brochures and/or educational information to public and private organizations to reach high risk segments of the population (e.g., pregnant women and young children). WASA must report by March 10 whether it provided PSAs to radio and television stations

in February and must provide PSAs again in August, and report by September 10, 2004. The sampling results for required tap monitoring from 2003 must be reported in the 2003 Water Quality Report, which must be delivered to consumers by July 1, 2004.

* * *

Chairman TOM DAVIS. Thanks for being with us.

Mr. Chairman and members of the committee, I'm Don Welsh. I am the Regional Administrator for EPA's Region III. Thank you very much for this opportunity to testify.

I provided detailed responses to your committee's questions in the written testimony, and what I'd like to do now is to outline the actions we've taken to move forward to assist the District in protecting the health of its residents.

It's unacceptable to us that many families in the District, particularly those with young children and pregnant women, continue to live with fear and uncertainty over the quality of the water they drink. The citizens of Washington, DC, demand and deserve much better. I know that these issues are important to the committee and the chairman as well, and I think that your calling this hearing will help advance the effort to find a solution.

It's clear that the D.C. Water and Sewer Authority [WASA], was highly ineffective in informing the public about the magnitude of the problem of lead in drinking water and in conveying the steps that families and individuals should take to protect themselves. Both the region and headquarters offices of EPA are taking a critical look back at how the region could have done a better job in its oversight of WASA. There will be lessons learned from our reviews which will benefit the agency in the future.

We're completing a thorough assessment of WASA's and the Aqueduct's activities to determine what violations of environmental law may have occurred and to ensure public health is protected. Our primary focus is on taking strong action with other agencies to help bring about solutions as quickly as possible to the current situation, both short term in ensuring a safe water supply for families and improving outreach efforts, and longer term in finding and fixing the root cause of the problem.

The first priority is to ensure that citizens have safe water to drink. EPA has published consumer guidelines that should be followed by all residents to reduce their risk of exposure. These guidelines prescribe longer tap water flushing periods for those with lead service lines. Additionally, as an extra level of safety the District's Department of Health recently recommended that pregnant women and children under 6, those most susceptible to health effects from lead, not consume unfiltered tap water. We believe that this is a prudent and cautionary step to take at this time.

I met this week with city officials to discuss the city's plans for providing safe water to residents. We discussed a number of actions that we consider advisable and necessary and will closely monitor the steps being taken in this area. If affected residents are not promptly supplied with safe drinking water, we stand ready and are fully prepared to exercise our authority to compel action.

Technical issues regarding the corrosivity of the water need to be resolved. We are working with WASA, the Washington Aqueduct, and other outside technical experts to help determine the correct balance of treatment needed to both reduce corrosivity and maintain the optimum protection against other harmful contaminants that can be found in drinking water. The expert technical team has been researching these issues and will report preliminary recommendations to me by next Wednesday. We will ensure that

measures recommended are implemented as quickly and effectively as possible.

Mr. Chairman, I also appreciate the importance to you and to Mr. Moran of the recent reports of some elevated lead levels in drinking water above the EPA action level in Arlington, VA. We share that concern for the health and welfare of the residents in that area and in Falls Church. We're working with the Virginia Department of Health and the Arlington County and Falls Church water systems, and we know that they're planning additional sampling.

Data from Arlington will be important in helping the technical team determine the cause of the problem and the appropriate solution. We will continue to keep the committee updated as we learn more.

In D.C., the lead service lines themselves, which are the major source of the high lead levels, need to be replaced. We expect to award funding beginning in April in the form of $8 million in fiscal year 2004 grant funds and $3.7 million in prior year funds to accelerate the replacement of these lines.

In its outreach efforts, WASA failed in its responsibility to effectively inform all impacted parties about a problem with their water. Notifications to individual residents were often not timely and did not achieve the goal of getting information to those who needed to know. While WASA had EPA guidance that, among other things, advised that one of the most effective ways to get the message out is through direct contact with news media representatives, mass media tools were not used as effectively as they could have been.

In hindsight, EPA should have more quickly assessed the effectiveness and impact of WASA's public notification program and promptly directed WASA to correct its deficiencies.

We are auditing WASA's public information efforts to identify specific elements that failed, and we have revised our own oversight procedures to ensure that shortcomings in public outreach are identified earlier and corrected.

Let me reiterate EPA's commitment to protect public health by identifying solutions to serious issues raised with respect to lead in D.C. drinking water. We must learn from the past, but I am focused on working on strategies that will help us move ahead in a positive way. To that end, I am directing WASA to test all lead service lines in 2004, to expedite notification to customers of the results of water sampling at their residences, to convey the necessary sense of urgency in all of its communications with the public, and to accelerate the physical replacement of lead service lines to the maximum extent possible.

Working closely with our public service partners and concerned citizens, we will continue to aggressively investigate this matter in the weeks ahead, to provide needed technical assistance, determine the exact nature of the problem we are facing, and find an appropriate balanced solution. EPA will not be satisfied until all aspects of this problem are resolved and the citizens of D.C. can once again be confident in the safety of their drinking water.

Thank you for this opportunity to testify and I look forward to answering your questions.

Chairman TOM DAVIS. Thank you very much.

Mr. Jacobus, thanks for being with us.

Mr. JACOBUS. Good morning, Chairman Davis and members of the committee. I am Tom Jacobus, the general manager of the Washington Aqueduct. The chart to your left shows in yellow the area served by Washington Aqueduct. The water we produce at two treatment plants in the District of Columbia goes to all of the residents of the District of Columbia, all of Arlington County, and to the city of Falls Church, which then operates a distribution system in that portion of Fairfax County, and water is further sold to Vienna. So the million customers of the three wholesale customers we sell to are represented on that chart.

Our water is taken from the Potomac River and treated in a conventional treatment process using sedimentation——

Chairman TOM DAVIS. Let me just ask if the staff could bring that chart a little closer over so the Members can see it a little better. Hold it flat out so maybe the audience can see it, too. There, is that better? Can everybody see that? Thanks.

Mr. JACOBUS. So to repeat, then, the area in yellow is the area served by water produced at the Washington Aqueduct from either the Dalecarlia or the McMillan treatment plants. We use conventional treatment which is a combination of sedimentation, filtration, and disinfection. The water that is sent to the customers from the Washington Aqueduct's treatment plant meets all EPA regulations and standards in terms of microbial activity and the chemical constituents of the water that are regulated in some way by EPA and other agencies.

In addition to the water's chemical and biological property constituents, there is also the issue of the corrosivity of the water. Under the lead and copper rule of 1994, the Washington Aqueduct conducted optimal corrosion treatment techniques. And from that we adopted a practice of using pH control as the optimal technique. When we converted to chloramines in 2000, the reason we did that was to meet the new disinfection byproducts rule, which was regulating chemicals that would be produced as a result of this disinfection, a class of chemicals known as trihalomethones. The disinfection byproduct rule has been very successfully met through the use of chloramines.

When we converted to chloramines we were aware there was a potential biological to chemical reaction that could increase the corrosivity of the water through nitrification in the distribution system. We monitored the system continuously for 6 months, found no evidence of nitrification and have continued to monitor. The nitrification could change the pH of the water, which could make the water more corrosive. We found no evidence of that. As of right now we do not see a direct link between the change to chloramines and increased lead leaching.

However, as part of our solution to this problem we're going to investigate that link and that information will be available to EPA, to the water industry, and to the public at large. We are dealing here with a problem of increased corrosivity of the water. We can handle that problem through the use of chemical treatment. We can reduce the corrosivity of the water, reduce the lead leaching from lead service lines, lead solder that might be still in homes,

and lead in brass or bronze fixtures. We will be able to do that and still remain with chloramine treatment which is essential for the protection of the public for the disinfection byproduct rule.

So in summary, I would like to say that we are committed to move quickly and safely to correct what appears to be a problem of corrosivity. We have a technical working group established, working very closely with the Environmental Protection Agency, the District of Columbia Water and Sewer Authority, the D.C. Department of Health. We have engaged clearly the best national and international consultants in corrosivity, and we're very confident that we can very quickly come to a decision on a revised chemistry and begin to introduce that into the distribution system in a way that will reduce what we're seeing in these lead concentrations. I look forward to your questions. Thank you very much for asking me here today.

Chairman TOM DAVIS. Thank you very much.

[The prepared statement of Mr. Jacobus follows:]

Testimony of
Thomas P. Jacobus
General Manager, Washington Aqueduct
Baltimore District, U.S. Army Corps of Engineers
Before the
Committee on Government Reform
U.S. House of Representatives

March 5, 2004

Good Morning, Chairman Davis and Members of the committee. I am Tom Jacobus, the general manager of Washington Aqueduct.

Washington Aqueduct, which is a part of the Baltimore District of the US Army Corps of Engineers, is a public water utility. We are regulated by the United States Environmental Protection Agency's Region 3 in Philadelphia.

In your letter requesting me to be here today, you asked me to focus on two points:

First, what practices does Washington Aqueduct use to protect the water?

And secondly, do the new chemicals (i.e., chloramines) used to treat the water for bacteria at the treatment plants have a highly corrosive effect on service lines?

Thank you for the opportunity to be here and to address these questions.

Washington Aqueduct provides potable water not just to the District of Columbia Water and Sewer Authority, but also to Arlington County, Virginia and the City of Falls Church in Virginia as well.

The provisions of the Safe Drinking Water Act and its associated regulations are the basis for all operations concerning the production, storage, and transmission of the drinking water produced and sold by Washington Aqueduct to its wholesale customers.

The Potomac River is the source of all water treated by Washington Aqueduct at its Dalecarlia and McMillan treatment plants. The treatment consists of chemically induced sedimentation using aluminum sulfate as the coagulant; filtration in dual media sand and charcoal filters; and disinfection using chlorine as the primary disinfectant and chloramines as a secondary disinfectant.

On-line instruments continually evaluate the physical and chemical nature of the water as it proceeds through the treatment process. The Washington Aqueduct's EPA-certified water quality laboratory conducts more than 30,000 analyses each year measuring hundreds of different parameters from samples taken in the treatment plant, the storage reservoirs and the distribution systems.

In November 2000, Washington Aqueduct modified its disinfection process by shifting to chloramines as a secondary disinfectant. The purpose of this change was to ensure that the customer distribution systems would be in compliance with the new EPA regulations concerning disinfection by-products.

Our decision to convert to chloramines was based on an engineering analysis of options and consultation with our customers and EPA. In the three years since that conversion, the process change has worked as planned to lower the level of disinfection by-products.

We used nationally respected consultants to plan and design the processes to lower the disinfection byproducts in the water in the distribution system.

Recent media reports stated that Washington Aqueduct ignored EPA's written guidelines warning that a significant change in disinfection treatment could increase lead corrosion. This is inaccurate. Throughout the planning and design of the chloramine project we considered the possibility that this disinfectant change would increase the level of nitrification in the distribution system. Such an increase could cause a lowering of pH in the distribution system, thereby increasing the possibility of corrosion. We believe that prompting this kind of consideration of possible effects is the intent of the recommendation contained in EPA's Microbial and Disinfection Byproduct Rules Simultaneous Compliance Guidance Manual. We put a plan in place to minimize the potential for nitrification and hired a contractor to monitor and analyze the distribution system looking for nitrification for six months following conversion. During this period, we did not observe nitrification.

We do not know if the change to chloramines is responsible for the concentrations of lead being detected in the water in some homes in the District of Columbia that are connected to the water mains by lead service lines. We are aware that presently there are individuals engaged in scientific research in academic institutions and elsewhere focusing on the relationship between chloramines and lead levels in tap water. We will work with them in any way we can to contribute to that research. However, we are not aware of any written guidance or finding from EPA that connected conversion to chloramines as a direct chemical precursor for increased corrosivity.

Our current efforts are directed at reviewing and revising, in any necessary ways, the Optimal Corrosion Control Treatment that is currently practiced at our treatment plants. We are fully engaged with EPA, the District of Columbia Water and Sewer Authority, and the District of Columbia Department of Health to quickly and safely reduce the corrosivity of the water. We have formed a technical expert working group whereby teams will address the water treatment

process, the distribution systems, and the communication of the various risks to the public.

When we recommended pH control as the Optimal Corrosion Control Treatment in 1994 and when EPA subsequently approved it, there was a consensus among the Washington Aqueduct, its customers and EPA that pH control would be sufficient to protect the public from lead and copper leaching from pipes in their homes. In considering the potential use of a phosphate-based corrosion inhibitor, several factors were used to evaluate this option against the demonstrated effectiveness of pH control as an alternative including: the environmental effects of combined sewer overflows containing phosphates, the costs to procure the corrosion inhibitor chemical, and the cost to remove it at the waste water treatment plants. The recommendation of Washington Aqueduct and its wholesale customers was to use pH control. EPA made a conditional designation of pH control as Optimal Corrosion Control Treatment in 1997 and made a final decision for Washington Aqueduct to use pH control in 2000. In 2002 EPA made slight modifications to this final decision, but kept pH as the Optimal Corrosion Control Treatment.

Washington Aqueduct, its customers and EPA are now reviewing this Optimal Corrosion Control Treatment designation based on the lead concentrations the District of Columbia Water and Sewer Authority is reporting to EPA. We will jointly and publicly announce by March 10 our specific plans to correct the current situation. Important technical analysis has already begun. We expect to use a variety of scientific approaches to arrive at the solution.

We recognize the importance of arriving at a safe and effective solution as soon as possible. Under our current schedule, our objective is to arrive at a water chemistry change decision by May 1 with a partial system test in the District of Columbia water to begin about June 1. This will be followed by a full system implementation about September 1.

It will take time (at least several months) for new chemistry to be effective in putting a thin mineral lining on the interior of the service lines. We, along with our wholesale customers, will be monitoring the progress and will give frequent and regular updates to the public.

Thank you for this opportunity to address these issues. I will be happy to answer any questions you may have.

Chairman TOM DAVIS. Mr. Gerstell, thanks for being with us.

Mr. GERSTELL. Thank you very much and good morning, Chairman Davis and members of the committee. I am Glenn Gerstell, the chairman of the Board of Directors of the District of Columbia Water and Sewer Authority. I am joined behind me by our general manager, Jerry Jphnson, and our deputy general manager, Michael Marcotte. I'm very pleased to be here to provide testimony about WASA's past, current, and future endeavors regarding elevated lead levels in the homes of some of our District residents.

First, I want to assure you that providing safe and clean drinking water to our community is our absolutely highest priority. Before responding to the chairman's questions, I would like to reiterate one point that Chairman Davis has already made and Mr. Jacobus just said, but because the point has been a little fuzzy in the news media, I'd like to underscore the fact that WASA provides the water, we do not produce it. WASA is responsible for distributing drinking water safely through our 1,300 miles of water mains under the streets of the District to individual homes and buildings, as well as to several Federal facilities directly across the Potomac in Virginia.

As we've just heard, it's the Army Corps of Engineers, through the Washington Aqueduct, that draws the water from the Potomac, filters and chemically treats it to meet EPA specifications. While WASA, of course, works cooperatively and closely with the Washington Aqueduct, treatment issues are ultimately their responsibility.

I'd like to respond to the chairman's questions by first briefly noting the history of this issue and, second, detailing what we are doing about it. Let's look at the history. The issue of lead in Washington's water supply isn't new. We've known for many years that we have lead service pipes in thousands of homes. But for many years tests showed that those pipes were not leaching lead. And year after year, our EPA-approved tests showed acceptable trace levels of lead.

The situation changed in the fall of 2002 after results came in from samples taken in compliance with EPA rules during the 2001 and 2002 testing period. During that time, 53 homes were tested and 26 exceeded the EPA action level of 15 parts per billion of lead. WASA then notified the EPA and the D.C. Department of Health about the situation as well as directly informing the affected customers. In its publications and notices, WASA used the prescribed language set forth in the EPA regulations.

I'd like to underscore that point: WASA believes it has complied with all Federal regulations on this matter.

And to dispel another erroneous impression left by some news reports, WASA does not deliberately sit on any information. Through early 2003 the informed judgments of WASA management were based on data from just those 53 homes. In 2002 and 2003 the regulation sample sizes were also small, and there had been many years of testing without an exceedance. At the time, our management had no reason to question the steps it was taking under EPA regulations. It was just this past December—December 2003 and early January 2004—when significant amounts of new data became available after being analyzed and aggregated which told us the

scope of the increased concentrations. While those results were certainly significant, we also need to put this issue in context.

The problem appears to affect primarily single family homes with lead service lines. As far as we know, apartment buildings and commercial office buildings are generally not affected, since they do not have lead service lines. So the problem appears to be concentrated in about 23,000 homes out of 130,000 service lines throughout the District. We recognize it could be more.

The records WASA inherited from the District Government are old and not complete and based in many cases on individual plumbers' reports made when a house was constructed in the last century. I have here and will give copies to the committee staff of the plumber's report. This one happens to be from, looks like June 27, 1909. And these are individual plumbers' reports. We have put all these on a computer, but the fact that they're computerized doesn't change the fact that the underlying data of which houses have lead service lines and which don't is literally something from the last century. In many cases we have no information about whether those pipes were ever replaced.

Until recently there was no reason to update this information, especially given all the other capital improvements WASA needs to do. As part of the EPA compliance, we launched a number of public education activities and began replacing lead service lines. The opinion at the time of our management, given the small pool of samples and the history of years of not having a problem in this regard, was that it would have been irresponsible to raise great alarm because of the small number exceeding the action level at that point. We did communicate directly with customers, and that was the responsible thing to do.

There has been criticism that the public campaign in 2002 and 2003 in accordance with EPA rules didn't raise the alarm loudly enough. I recognize that. That may be the correct judgment in hindsight, especially now that we know that lead levels were apparently even higher than were known at the time. But I think at the time, a reasonable person would have concluded that the approach then reflected a fair balance of the relevant factors and evidence. I have said, and will repeat here again, that I believe in retrospect there was clearly room for improvement in our public education campaign.

Our other outreach efforts, included preparing comprehensive brochures in 2002—I have copies of this and will be pleased to provide it to the staff—public service announcements, ads in the Washington Post in 2002 and 2003. We created a lead services hotline and publicized that over a year ago, in January 2003. We sent letters to various local government officials, had meetings of advisory neighborhood commissions. And then in 2003—this past summer, we started taking more samples, ultimately reaching over 6,000 samples. By January 2004 the final results showing significant increases were known. At that point, WASA management had planned to make an announcement. However, information was shared with the press by a citizen before WASA was able to do so.

Let me now turn to what we are doing about the problem. I'll briefly outline six steps that we're taking. First, getting to the root of the problem. As we have already heard, we are conducting re-

search in collaboration with our partners on why there has been such an increase in lead levels. We know that lead is not present in our water mains. We're working with the EPA, the Washington Aqueduct, the D.C. Department of Health and respected scientists and experts, and we expect to have a preliminary report later this month.

Second, we will increase the number——

Chairman TOM DAVIS. We want to make sure that you send that report to the committee.

Mr. GERSTELL. I will be delighted to, and will certainly do so.

[The information referred to follows:]

Monthly Plant Effluent and Finished Reservoir Lead Monitoring

	Dalecarlia	McMillan	1st High	2nd High	3rd High	New Tower
March-01	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
April-01	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
May-01	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
June-01	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
July-01	< 0.5	< 0.5	0.5	< 0.5	< 0.5	< 0.5
August-01	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
September-01	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
October-01	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
November-01	< 0.5	5.0	< 0.5	< 0.5	< 0.5	< 0.5
December-01	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
January-02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
February-02	< 0.5	< 0.5	< 0.5	1.0	1.0	< 0.5
March-02	< 0.5	< 0.5	0.7	< 0.5	< 0.5	< 0.5
April-02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
May-02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
June-02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
July-02	2.0	< 0.5	2.0	< 0.5	0.5	2.0
August-02	< 0.5	< 0.5	< 0.5	0.7	< 0.5	< 0.5
September-02	< 0.5	< 0.5	2.0	< 0.5	< 0.5	< 0.5
October-02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
November-02	< 0.5	< 0.5	< 0.5	0.7	< 0.5	3.0
December-02	< 0.5	0.6	< 0.5	< 0.5	< 0.5	0.6
January-03	< 0.5	< 0.5	< 0.5	< 0.5	0.9	0.5
February-03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
March-03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
April-03	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
May-03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.0
June-03	< 0.5	1.0	< 0.5	< 0.5	< 0.5	< 0.5
July-03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
August-03	< 0.5	0.6	< 0.5	< 0.5	< 0.5	< 0.5
September-03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
October-03	< 0.5	< 0.5	< 0.5	0.5	< 0.5	< 0.5
November-03	< 0.5	0.5	< 0.5	< 0.5	0.7	< 0.5
December-03	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

All results are in ug/L

Mr. GERSTELL. Second, we will increase the number of lead service pipes replaced this year by 50 percent. The Board has decided, in conjunction with management's recommendation, to increase that and to allocate an incremental $7 million to that program. We will be focusing in particular on those lead pipes with the highest lead readings, where pregnant women or where children under the age of 6 live. If we do that, we then will be increasing the replacements from 800 to over 1,300 this year. And we expect to replace an additional 300 service pipes in connection with other activities that WASA is already undertaking.

Since lead pipes are in both the public and private space, we'll work with homeowners when they ask us, as we will suggest to them, that they replace the portion in private space at cost if they ask us to do so. We're currently having discussions with the District Government about obtaining financial assistance and providing financial assistance to individual homeowners who might have difficulty in paying for their portion of the replacement. We continue to send test kits upon request to homes with known lead service pipes, and WASA pays for the testing.

Third, the Board of Directors, which consists of a number of government officials and non-salaried private citizens such as myself, is taking this matter very seriously. We are devoting an extraordinary amount of attention to this issue. We have had a special Board meeting solely on this issue. We have heard from experts at our regular February and March board meetings. We have conducted various committee meetings and conducted several press briefings to get current information out to the public. Just yesterday at our monthly meeting, the WASA Board of Directors adopted a resolution to begin a formal investigation into this matter. We are retaining the services of the firm Covington and Burling, and heading that review will be former Deputy Attorney General of the United States, Eric Holder, who is a partner of that firm and also, as you know, is a former U.S. Attorney for Washington. He will be able to draw upon the expertise of two distinguished experts, the director of the School of Public Policy and Public Administration of the George Washington University and a distinguished professor at the Johns Hopkins Bloomberg School of Public Health.

Fourth, we're seeking to verify whether the problem can be ameliorated simply by flushing water through a home's plumbing system. Obviously, this isn't an ideal or permanent solution. But if it turns out that lead service pipe replacement is the only answer, we will need interim steps.

Fifth, at the initiative of WASA management, the Brita Product Co. generously donated 10,000 water filtration pitchers to the District. We've distributed some of those to home day care centers, and we will be distributing those to homes that have children under the age 6 or women who are pregnant and breast-feeding, if those homes have lead service lines.

Finally, it's critically important to let residents know about all of these activities underway. We have stepped up our communications with our customers through regular press briefings. We have mailed letters to all of our residents in English and Spanish, with accompanying literature on this subject. The March issue of our customer newsletter highlights lead in drinking water and pre-

cautions residents can take. We've updated our Web site almost daily. That's www.DCWASA.com. Indeed, we just arranged on the Web site to put information about the lead service lines and connect it directly with information about a homeowner's account. So it's now possible to log on to our Web site, type in your name and password, and determine whether your home has a lead service line.

I'd like to conclude by noting that we at WASA are very clear about our goal in this area, which is to provide safe and clean drinking water to the community. We welcome the collaboration formed with our partners, some of whom are here today, who share our immediate objective: identify the cause of the problem, find a solution that works, and tell the public about it at every step along the way.

Mr. Chairman and members of the committee, thank you for this opportunity to inform the committee and thus the public. I would be happy to answer any questions you may have.

Chairman TOM DAVIS. Thank you.

[The prepared statement of Mr. Gerstell follows:]

Testimony of
Glenn S. Gerstell
Chairman, Board of Directors
District of Columbia Water and Sewer Authority
Before the Committee on Government Reform
United States House of Representatives
Friday, March 5, 2004

Good Morning Chairman Davis and Members of the Committee. I am Glenn Gerstell, Chairman of the Board of the Directors of the District of Columbia Water and Sewer Authority (WASA). I am pleased to be here to provide testimony about WASA's past, current and future endeavors relative to the Lead Replacement Program, and the issue of elevated lead levels in some homes of District residents.

It goes without saying that this issue is of widespread interest, and this is another excellent opportunity to set the record straight on what we are doing about it. I want to assure you that providing safe and clean drinking water to our community is our highest priority. We are vitally concerned with taking the necessary actions to assure public safety in this regard. There are four critical areas I wish to cover today and, of course, answer any questions you and Members of the Committee may have. But before I do that I want to make one key point clear that has been a little fuzzy in the news reports – WASA provides the water, we do not produce it.

WASA is responsible for distributing drinking water safely through our 1,300 miles of water mains under the streets of the District to individual houses and buildings, as well as to several federal facilities directly across the Potomac in Virginia. It is the US Army Corps of Engineers, through the Washington Aqueduct, that draws the water from the Potomac, filters and chemically treats it to meet EPA specifications. While WASA of course works cooperatively and closely with the Washington Aqueduct, treatment issues are ultimately their responsibility.

Board of Directors Due Diligence

First, just yesterday, at our monthly meeting, the WASA Board of Directors adopted a resolution to begin a formal, independent investigation of this matter. We are retaining the services of the firm, Covington & Burling, and conducting the review will be Eric Holder, Jr., a partner of the firm who served as United States Attorney for the District of Columbia and United States Deputy Attorney General under President Clinton. Mr. Holder will also be able to draw upon the expertise of two other distinguished experts – Professor Kathryn Newcomer, Director of the School of Public Policy and Public Administration, the George Washington University and Dr. Lynn Goldman of the Johns Hopkins Bloomberg School of Public Health. We will draw upon this exceptional talent to independently confirm *when* this problem was known; *what* steps have been taken since that time; *how* it was communicated with our customers and, *what* we have determined will be our course of corrective action going forward.

Another new development is that WASA has taken 100 samples in various parts of the city this week to examine the results of the newly recommended 'flushing' time (10 minutes). These samples are from the worst cases – those showing 300 ppb or more. Of the 4,000+ testing above the action level (out of 6,000+ homes tested), this is a small group having such high results. We should have results shortly.

Also yesterday, The Brita Products Company generously donated 10,000 water filtration pitchers. The first shipment of 3,000 arrived yesterday. Approximately 200 of the filters are being distributed to home day care centers with lead service pipes. The remaining filters and subsequent shipment of 7,000 systems will be distributed to homes with lead service pipes and children under age six and women who are pregnant or breastfeeding. The rest of the filters are expected to arrive early next week.

In the meantime, WASA has undertaken a number of technical and educational remediation steps to resolve this matter and additional measures are being considered now. The Board, which consists of a number of government officials and non-salaried private citizens such as myself, is taking this matter very seriously. As such, my colleagues and I held a special meeting solely on this issue, conducted several discussions at our February and March meetings; conducted various committee meetings and phone conferences (daily with the General Manager); and conducted press briefings to get current information to the public.

We must also reaffirm to you that WASA believes it has complied with the EPA regulations on this matter.

A Bit of History

Second, to put this important issue in perspective, WASA was first aware of the potential problem in fall 2002 after results were in from samples taken during the 2001-2002 Lead and Copper Program compliance period. During that time 53 homes were tested and 26 exceeded the EPA "action level" of 15 ppb (parts per billion). WASA then notified EPA and the DC Department of Health about the situation, *as well as directly informing the affected customers*. Please let me underscore this point – WASA believes it has complied with all federal regulations on this matter. In its publications and notices, WASA used the prescribed language set forth in the regulations.

And to dispel another erroneous impression left by some news reports -- WASA did not sit on any information. Through early 2003, the informed judgments of WASA management were based on data from **53** homes, of which **26** tested above the EPA action level. In 2002 and 2003, the regulation sample sizes were also small (200 samples) and there had been many years of testing without an exceedance.

At the time, there was no indication that WASA should review the steps it was taking under the regulation. It was late December 2003/early January 2004 when significant amounts of *new* data became available, after being analyzed and aggregated, which told us the scope of the increased concentrations.

We also need to put this issue into context. This problem affects mainly single-family homes with lead service lines. As far as we know, apartment buildings and commercial office buildings are not generally affected since they do not usually have lead service lines. So the problem is concentrated in about 23,000 (out of 130,000) service lines. However, it could be more. The records WASA inherited from the District are old and not complete, and are based in many cases on individual plumber's reports made when a house was constructed in the last century. Until recently, there was no imminent reason to update this information, especially given all the other capital improvements WASA needed to do.

As part of the EPA compliance, WASA launched a number of public education activities, and began replacing lead service lines. The opinion at the time, given the small pool of samples, was that it would have been *irresponsible* to raise great alarm because of the small number exceeding the action level at that point. We did communicate *directly with customers* for that was the *responsible* thing to do.

Other outreach efforts included:

- In October 2002,a comprehensive brochure on lead awareness and prevention was created in conjunction with the DC Department of Health, was mailed to all District residents, and editorial departments of the daily local newspapers. It was in full compliance with EPA regulations and went beyond by offering additional information on lead exposure. It specifically stated information about elevated lead levels in some homes in the District and offered advice on how to lower exposure potential.

- A public service announcement was released to heighten awareness and encourage testing following EPA language regulations.

- An ad [in *The Washington Post*, Health section] was purchased by WASA alerting residents about elevated levels of lead in drinking water in some homes and offered advice of where to obtain more detailed information on the subject.

- A special lead services hotline was created to provide specific information to customers in early 2003 – a year before the recent news media attention.

- Based on the information we had at the time, letters were sent to local officials.

- In late summer/early fall 2003, the testing program broadened and thousands of letters were sent to customers suspected of having lead service lines; WASA requested to test them.

- Advisories were printed on bills, and newsletters about lead were included in bills, as required by EPA, and the language used was as required by EPA.

- Results were compiled and analyzed through December 2003. Approximately 4,000 homes tested above the action level out of the 6,100+ samples taken. By January 2004, the final results were known.

- At this point, we had planned to make an announcement; however, information was shared with the press by a citizen before we could.

- Additional activities have occurred -- see attachment.

Current Actions

Third, getting to the root of the problem, conducting research on why there is such an increase now in some homes will continue to be a priority for WASA. Currently we are working with the EPA, Washington Aqueduct, the DC Department of Health and respected scientists and academic experts. We expect to have a preliminary report later this month.

We will also increase the number of lead service pipes replaced this year by 50 percent. It is believed that those pipes – typically connecting the city's water mains to single family homes built before 1950 – are the most likely source of the higher lead concentrations. We have replaced 500 pipes so far. But we are doing more. We also are looking into whether corrosion is a factor, and if water treatment should be adjusted.

I have conferred with the other members of the Board of Directors and we support a management recommendation to reallocate already approved funds from other projects adding $7 million to the Lead Service Line Replacement budget. These additional funds will be used to replace lead pipes with the highest lead readings, where a pregnant woman or where children under the age of six live. This will increase the replacements from 800 to 1300 this year; we expect to replace an additional 300 service line pipes in connection with other work on District streets under WASA contracts.

Since lead service pipes are in both public and private space, we will work with homeowners when they want to replace their portion in private space at cost if they ask us to do so. Discussions are being held with the District government about financial assistance options for citizens having difficulty paying for their portion of the replacement.

We continue to send test kits upon request to homes with known lead service pipes and we pay for the testing.

Public Communications

Forth, it is critically important to let residents know about all these activities underway. We have stepped up communications with our customers through regular press briefings;

mailing a letter to all residents (in English and Spanish) with accompanying literature on this subject; the March issue of the customer newsletter, which is a bill insert, was entirely devoted to lead in drinking water and precautions residents can take; our website is updated frequently with helpful information on the subject; we have tripled the dedicated number of phone lines for the lead service command center; our management regularly attends community meetings in various parts of the city to give presentations and answer questions from our customers; and, we also have made available brochures and maps to libraries and recreation centers throughout the city.

If customers have access to the Internet, they can go online through WASA's website and see if they have a lead service line using their customer account number. WASA's website address is www.dcwasa.com.

Going Forward

We have a number of expert partners and advisors who share our common goals – find a solution, devise a reasonable plan to fix the problem and tell the public how this is going to be done. At this juncture, we want to dispel fear with facts. We have to understand this problem, manage it in the meantime and move on to a permanent fix. So much is still unknown; many experts disagree on solutions and potential health impacts. It is our job to find a *solution that works* for our city and our residents and implement this solution as quickly as reasonably possible. We, at WASA, are firmly committed to do this and welcome the collaboration formed with our partners, some of whom are here today.

Mr. Chairman and Members of the Committee, thank you for this opportunity to present this update to you. I will be happy to answer any questions you may have.

Chairman TOM DAVIS. My first question is, what do you say to someone who is in the District of Columbia, or even in Arlington, or maybe out in Fairfax, who gets their water from Dalecarlia or has a lead pipe delivery system? What do you tell them to do today while we're waiting on everybody to fix it?

Mr. GERSTELL. The advice we're giving is twofold at the moment. One is in conjunction with the Department of Health, which has issued an advisory. Certainly if someone has a home that has a lead service pipe and there are pregnant women and children under the age of 6 or women breast-feeding, we recommend that they do not drink the water or the——

Chairman TOM DAVIS. How about me? I'm neither one of those.

Mr. GERSTELL. For anyone else, we are continuing to suggest a program of flushing for up to 10 minutes if you have a home that has a lead service line. And we believe that 10 minutes is the appropriate time to get the water out of the system.

Chairman TOM DAVIS. Does EPA agree with that?

Mr. WELSH. That's the same advice we would give and we have up on our Web site as well, that everyone should know and follow the flushing protocol, whether or not you have a lead service line. If you believe you may have a lead service line, follow the more extensive flushing protocol.

Chairman TOM DAVIS. It's going to mean a lot more water usage, isn't it?

Mr. WELSH. Unfortunately, that's correct. If you are in the sensitive population, as Mr. Gerstell said, that we recommend that you—we concur with the recommendation by D.C. Health that you not drink the unfiltered tap water.

Chairman TOM DAVIS. Mr. Grumbles, let me ask you, what are the emergency options that you would have right now? I am just asking, and not necessarily saying what we should do, but what authority do you have under the law to act in an emergency situation like this right now.

Mr. GRUMBLES. The Safe Drinking Water Act says that—there is a section, section 1431, that does provide an authority when there is an imminent and substantial endangerment, and when the State and local authorities are not acting properly in response to that. Then the agency does have an authority under that section of the Safe Drinking Water Act to issue an imminent and substantial endangerment. And we have done that, and we are, I would say, aggressively pursuing that option, looking at it.

I would just like to refer to Don to add any more——

Chairman TOM DAVIS. If you could be a little more specific. Also, we still don't have our hands around the problem, do we, in terms of exactly where the problem is, if it is the distribution or the production, do we?

Mr. GRUMBLES. I would say that you are correct. There are a lot of questions, corrosivity, what is causing the corrosivitiy, should we focus just on the lead service lines, and clearly the answer to that is no. I mean, from other jurisdictions we are learning it is much more than that. There are technical, factual questions. We feel that—we fully support the effort to have a technical working group that everyone is part of.

We think it is also important to have some independent review of that as well, to try to get maximum approach, because we all know that as important as action, immediate action, in response to this situation is, we need to make sure that it is based on the scientific—the best scientific approach, and it does involve a lot of analysis of the chemistry, and the various factors that are involved.

Chairman TOM DAVIS. So before you spend millions in one direction, you want to make sure that you are doing the right thing to correct the problem?

Mr. GRUMBLES. That is correct.

Chairman TOM DAVIS. Mr. Welsh, do you want to elaborate on that?

Mr. WELSH. Yes, sir. The mayor of D.C. named the city administrator as his point person on this issue. And on Tuesday I met with the city administrator and did review with him the fact that we have the authority that Ben mentioned in 1431 of the Safe Drinking Water Act. We discussed a number of things that we think are of primary importance that need to happen, principally that the folks who have been advised not to drink the unfiltered tap water be provided with an alternative source of water through filters or some other means.

Several other actions that we think are advisable or that we think are necessary to address the situation, principally making sure that folks have safe water to drink while we do that technical work to get the answers to the corrosivity. And we have been in contact since then repeatedly with the D.C. Emergency Management Agency and with other representatives of D.C. government to get fully informed about the steps that they are taking to address those needs. And we are fully prepared to act with the authority that we mentioned under 1431 if we determine that is the best way to get a solution.

But we have been in close contact with D.C. and continue to be as to the plans that they are making and the implementation of those plans to meet those immediate needs, and we stand ready to act and are quite prepared to do so whenever we determine that is the best way to get a solution.

Chairman TOM DAVIS. Let me ask this. How does EPA or any water system balance the comparative risks? In this case you use chloramines to reduce disinfection byproducts. It appears to have reduced the benefits of the corrosion control program. At the time the District switched to using chloramines in 2000, would that switch have been required by EPA if the District had not switched on its own? And at that time, did EPA have any evidence that chloramines would increase corrosion and lead to more lead in the water?

Mr. GRUMBLES. Mr. Chairman, you are raising one of the most fundamental issues and challenges for those who are on the front lines in providing safe drinking water to the American public, and that is the issue of simultaneous compliance with the various regulations. The regulations are based on sound science, but this is a perfect example that Tom Jacobus is pointing out, that whereas the science tells us that we need to take more steps and be more concerned about disinfection byproducts, trihalomethanes, based upon the important work that chlorine does as a disinfectant, that leads

to taking various steps and procedures. Then the question is, as well, will that have some effect on corrosivity, and will you be risking noncompliance with the lead and copper rule if are you going forward on that step?

I can tell you that as a Federal agency and as national program managers, we are very much focusing in on that simultaneous compliance conundrum.

Chairman TOM DAVIS. In fact, this could be a national issue, not just here, in terms of——

Mr. GRUMBLES. It is a national issue. It is one that utilities live with and work with and that we recognize as part of the challenge and the difficult nature of meeting all of the requirements in providing safe water.

Chairman TOM DAVIS. Thank you.

Ms. Norton.

Ms. NORTON. When the science isn't perfect, and it often isn't perfect, at the very least what the regulations seem to require is that people be informed.

So the first problem I have has to do with the action WASA took in informing people. Now, I am showing you a posterboard that says that within 60 days, when you know that the part per billion level has been exceeded, this language has to appear in water bills.

Now, this language has to appear in large print the way it is on that posterboard, and that language says, some homes in this community have elevated lead levels in their drinking water. Lead can cause a significant risk to your health. Please read the enclosed notice for further information.

Why did WASA not do this?

Mr. GERSTELL. My understanding is that we did; that was put in our bills. And I have a copy here in front of me of the notice, the two-page notice that was referred to. That is——

Ms. NORTON. My understanding is——

Mr. GERSTELL. The date on it is 2003. I am sorry.

Ms. NORTON. I am talking about in the water bills.

Mr. GERSTELL. There was a statement in each water bill.

Ms. NORTON. This is just the kind of response—you know good and well I am talking about 2002, and you are talking about 2003.

Mr. GERSTELL. I apologize, I am sorry. I was not——

Ms. NORTON. We are talking about when this problem began. Your answer should have been, we didn't do it in 2002, we did it in 2003. And this is the kind of thing—we want to get some candor now from WASA.

Mr. GERSTELL. I misunderstood your question. I thought you were referring to 2003.

Ms. NORTON. If you read the question before the answer, you would have a clear view of any problem. We want to know why you didn't do it in 2002, within 60 days after you discovered more than 15 parts—more than above 15 parts per billion.

Mr. GERSTELL. Would it be acceptable if I asked Mr. Johnson, our general manager, who is more familiar with the operations?

Ms. NORTON. Mr. Gerstell, I don't know why you are the one testifying. If he has been the one who has been closest to it, we should have been hearing from him. We want to know what actually happened.

Chairman TOM DAVIS. He is sworn in. We will let him answer it.

Mr. Johnson.

Mr. JOHNSON. Thank you, Ms. Norton.

Chairman TOM DAVIS. Let me ask that staff maybe move another chair up there.

Go ahead.

Mr. JOHNSON. Thank you, Ms. Norton and Chairman Davis. At that time we were doing quarterly billing, and so in order to comply with the regulation, after conferring with EPA we sent notices to every household in the District of Columbia through a special mailing that did contain that special language.

Ms. NORTON. You are telling me that in 2002, in quarterly bills, you sent this notice in these capital letters?

Mr. JOHNSON. It was sent in a special mailing to all of the customers.

Ms. NORTON. All right. First of all, that is not my understanding.

Mr. JOHNSON. OK.

Ms. NORTON. My understanding is that you did that in 2003 and not in 2002, and I am talking about 2002. Now, this is what my understanding is: That instead of doing that in 2002, you instead issued this brochure. This brochure is entitled, District of Columbia Water and Sewer Authority and the District of Colombia Department of Health National Lead Awareness Week. Living Lead-Free in the District. And buried on page 3 is the following language: However, in the annual monitoring period ending June 30, 2002, the lead results indicate that although most homes have very low levels of lead in their drinking water, some homes in the community have lead levels above the EPA level of 15 parts per billion.

If you think anybody goes through these things and reads down to page 3 in small print, then you know more about the way—how busy people are than I do. But, more than that, that is what is required.

In 2002, our information is that was not done in water bills. Are you contradicting that? You are saying in water bills right after this, as language was required, you, in fact, in the next water bill put that language in those capital letters, and that EPA can verify that happened?

Mr. JOHNSON. No, ma'am, Ms. Norton. I am not verifying that. I know that we did send this brochure, as you did point out, to every household in the District of Columbia in order to meet the requirement to get the notice to persons within that timeframe that is required in the law, because we were not doing monthly billing at the time.

Ms. NORTON. Well, I can understand that if you didn't—first of all, I want to ask EPA, why—you gave them a way out, which they should not have taken, because they could have done it in the next monthly water bill, and they could have done it in capital letters, as your regulations require. But why did you let them do this? What kind of watchdog are you? Why don't you say, hey, if you are going to do it in this brochure, then certainly you have to comply with our regulations and do it in capital letters so everybody is on notice that there is lead in their water, or may be lead in their water?

Mr. WELSH. It is my understanding that because they did not have a monthly billing cycle, that this special mailing did meet the requirements, that the timing of that mailing met the requirements. It is clear that there are many parts of the notification to the public that suffered from what you noted, that they were—it was difficult, even though the information was made available to the public, for people to quickly and readily recognize that is something that should be important to them and they should take notice of.

So we hope to be able to do a better job controlling that in the future to make sure that we not just look for whether the requirement was met, but that it was effective.

Ms. NORTON. I just want to say that this was clearly done deliberately. There was a way to do it that was written in the regulations in capital letters. You chose to do it a way that was least likely for the public to be on notice that there was lead in the water.

Thank you, Mr. Chairman.

Chairman TOM DAVIS. Thank you.

Before I recognize Mr. Moran, I would just ask, just to followup with EPA, and even WASA, wouldn't you agree that the way this notice was delivered is probably not going to get a very heightened awareness on the part of the recipient, in retrospect?

Mr. JOHNSON. Mr. Chairman, in hindsight I would certainly agree with that. At the time that we were preparing the notice to go out, we felt that it was appropriate to meet the requirement, especially given the very small sample that we were dealing with at the time, which was only 50 homes in the District of Columbia.

Chairman TOM DAVIS. OK. Mr. Moran.

Mr. MORAN. Thank you very much, Mr. Chairman. I know Mr. Johnson, and I know him to be a very fine person and an excellent manager. So, again, I don't see this as trying to point personal blame, but we all have to work together to figure out what took place and how we are going to deal with this.

The first that you were aware that we had a problem, the first date, must have been this lead and copper report for the monitoring period that ended June 30th. That is the first time you knew that there was a serious lead problem?

Mr. JOHNSON. We had some indication of elevated lead levels in the previous year where we saw a trend where the numbers were increasing, but we had passed the requirements in the prior year, and we were monitoring that more closely at that point.

Mr. MORAN. Well, but so you knew that there was a problem, though, prior to that. At some point during this period, it seems as though EPA extended the period of time that you could have before having to submit reports. At one point they were 6-month reports, and then EPA said that it is OK to just submit annual reports; isn't that accurate? When did that occur, 2000?

Mr. WELSH. I think you might be referring to originally when the rule went into place, jurisdictions had to do 100 samples annually if they were not over the exceedance level.

Mr. MORAN. You let them drop to 50 samples, and instead of reporting every 6 months, you let them take a year to report.

Mr. WELSH. The rule allows reduced monitoring if you have been meeting—if you have not been exceeding the action level. And D.C.

originally in the early 1990's had some problems, had some numbers above the action level. Steps were taken to address the corrosivity, and those steps worked at that time. Their sampling returned to being under the action level, and then they were allowed to do reduced monitoring of 50 samples annually.

Mr. MORAN. They requested that, and then you granted it immediately. And so then they only had to report on a yearly basis. It appears that we would have at least picked up 6 months of awareness if we hadn't extended that. But then as soon as you got this report, you then went back to say, well, you have to monitor it every 6 months, and you have to give us—do at least 100 samples. But, beyond that, you also knew that this was extraordinary, where about half of the samples showed they exceeded their 15 parts per billion.

So I guess I do want to followup with Ms. Norton's and Chairman Davis' questions. At what point did you say, look, we have to get serious, we have to make the public aware of this, you have to let them know that they fully understand the warning that you are giving them? Were you working in close contact with WASA to make sure that was being done?

Mr. WELSH. As you mentioned, the numbers that were received by EPA on August 27, 2002 indicated that there were exceedances. The requirements that you mentioned are triggered automatically, so we don't have to tell them that you need to do this. They know that triggers the increased monitoring, increased sampling, as well as continued work on lead service line replacement and the public outreach and education requirements. So those things kick in automatically.

WASA began carrying them out. EPA believed that those steps were being carried out. It is clear in hindsight that even though the steps were being taken, that the message wasn't being clearly received by the public. But the requirements are triggered automatically by the data that was——

Mr. MORAN. So if you had to do it over again, you would have said, you are going to make sure that the public fully understands what we are doing here, and the notification has to be more—has to be clearer. And the public needs to know the seriousness of this, which they clearly didn't at this point.

We have now gone for 3 years where the water has contained serious amounts of lead. We know the seriousness that lead can have in the body. Is there any way where we are going to know what adverse impact this has had on the community? I mean, are we going to followup with those homes, for example, that we know that had way in excess of 300 parts per billion, some had thousands? I read one report that one couple had extraordinarily rare high amounts. That must be damaging if they have been using tap water. Are you going to monitor their health? Do we know what kind of an impact that this could have had to go for 3 years with their drinking this high lead content in their water?

Mr. WELSH. It is my understanding that the D.C. Department of Health is following up with the individual families that had the very high levels. The way to know whether there was—the first indication of whether there could be a health impact is to get a blood-lead level from the people drinking the water in that home.

Mr. MORAN. Well, let me go beyond. We are just talking about the samples, like in an audit you find some problems. These are people who, by happenstance, happened to be sampled. There could be other families, could there not? Well, there have to be statistically. There have to be a lot of families who are also exposed to that, but we don't know what families have—that didn't happen to have been sampled have also had extraordinarily rare but dangerous levels of lead in the water. Is that accurate?

Mr. WELSH. As Ben mentioned earlier, lead in drinking water is only one avenue of exposure to lead. So we think it is important that folks who are exposed to lead through any avenue could be——

Mr. MORAN. Well, I appreciate that. We are talking specifically now. I don't want to take up too much time, but I want to get some answers. How serious is this? If somebody has these high, elevated levels of lead coming into their system over a 3-year period, do we have any analysis of what kind of adverse health effect this is likely to have?

Mr. WELSH. Well, the exposure does vary by how much water was being drunk and whether it was being used to cook and dilute juices and things like that. So the only way to really know—and the health professionals advise that people who have been exposed get blood lead levels tested.

We had an opportunity in Philadelphia to pilot an outreach with the health community to have nurses go into homes and educate families about reducing their lead exposure from things—all sources of lead. And we are looking at trying to replicate that in D.C. to augment the efforts of the D.C. Department of Health to get out into the community and make sure that people understand about lead, and to recommend that people who may have been exposed get their blood-lead level tested. So the only way to know the health impact is to measure the blood-lead.

Chairman TOM DAVIS. We will get another round.

Mr. Tierney.

Mr. TIERNEY. Thank you, Mr. Chairman.

I direct my questions initially to the two witnesses from the EPA. The Safe Drinking Water Act, as you mentioned, gives the EPA authority, and emergency authority when you want, to address threats that are substantial in nature. In 1993, the EPA exercised that authority.

You stated in your testimony that you are going to take whatever action is appropriate here. Now, we knew since the summer of 2002—there have been samples showing extremely high levels on this. Isn't it time that authority be exercised in this instance, and are you intending to do that? And exactly what are you going to do under that emergency authority?

Mr. WELSH. Well, we think the thing that is immediately to hand that we want to make sure of is that folks who have been advised not to drink the unfiltered tap water have provision for water, and we have talked to the city about that. We have told them we have this authority. We told them that we are ready to use that authority, and we are monitoring very closely their provision of filters. I believe the mayor announced some filters yesterday. And we want

to make sure that the folks who need to have that provision have it. We have——

Mr. TIERNEY. You have not exercised the emergency authority yet, you are just——

Mr. WELSH. That is correct, sir. We have not.

Mr. TIERNEY. When do you think it would become appropriate for you to exercise that emergency authority, given the history that we have here?

Mr. WELSH. Well, at any moment that we think that would be the best way of getting a solution. The city is acting, and we are monitoring very closely their actions. And if we think that their actions aren't adequate to address the needs of the people to have safe water, we are ready to invoke those authorities immediately.

Mr. TIERNEY. Now, Mr. Grumbles, I think we should all be a little concerned about the EPA's drinking water lead rules. The rules themselves, and EPA's oversight of those rules, simply don't appear to have been adequate in this situation.

Now, I understand, looking at a little history of this, back in 1991 when the rules were being promulgated under the first Bush administration, Mr. Waxman on this committee raised a lot of the issues and loopholes that appeared to be in there, and now it is sort of eerie that here we sit in 2004 watching this all come to fruition.

In 1991, EPA sort of retreated from setting a standard for lead that was definite. As I note, the act itself requires you to set enforceable maximum contaminant levels for each contaminant in drinking water. If the water exceeds the amount that is allowed, then it is a violation of the law, and EPA and everybody, and a citizen even, could bring enforcement action.

But in 1991, with respect to lead, there was no definite contaminant level that was set. In fact, this is called an action level. If you exceeded that, then you just—would trigger only additional regulatory requirements.

Given the information that we have now, don't you think it is time to revise that rule, take a look at it and change it?

Mr. GRUMBLES. Congressman, I honestly can't begin to even think of it as a partisan rule and implementation of the rule as being a partisan issue.

Mr. TIERNEY. Well, address the question that I asked you then, which is that in 1991, Mr. Waxman, you know, for whatever party he is in, I think raised some very salient issues that this was a rather weak way to go about doing it, and that when we had contaminant levels for every other contaminant, in this case we only had an action level. Given the history then, ought we to have more, should we change that, and why do we look at it strictly for procedure?

Mr. GRUMBLES. I think you are asking some very good questions, and my answer is as follows. In the 1991 rule that was finalized, it did ultimately take an important approach. It made the decision that, because what we are talking about is the quality of the drinking water at the tap, more so than the quality of the drinking water as it leaves the treatment plant, you need to take that into account so that the rule is workable and really does result in clean and safe drinking water. And so, based on that, the decision was

that this is a unique situation. It requires an action level. An action level triggers a lot of actions.

I can tell you right here that we are not comfortable with the way the situation has played out in the District of Columbia under the lead and copper rule. When you look at reporting, or public education, as Delegate Norton was mentioning, the spirit of robust public communication, whether or not the public was getting what they really needed to get in real time, we are more than willing to look at that rule over the last 13 years. It has been a while since it has been revised.

It was revised slightly back in 2000 during the previous administration, adding some more flexibility in some of the monitoring and reporting provisions. We are fully prepared, and I am instructing the staff to look very seriously at it, to learn the lessons of today and see whether there needs to be a more specific focus; should there be more actions that are triggered, not just at a 15 part per billion level, but at a different level.

So I welcome the line of inquiry. I think it is very much a part of the important debate that follows on this. But I do want to emphasize that the lead and copper rule has been successful in this to the extent of reducing the problems that we have seen.

Now, a lot of this is from data that we get from the States, and we need to work with them to ensure that there is more data that is being provided to us, but since finalization of the rule, there has been progress made in the lead and drinking water situation. And we want to work with everyone to really have a thorough review to see what we can learn from this situation, to see if more revisions ought to be made, more emphasis on right to know, communication. That is a priority for us, as this situation plays out full well, is the more that the consumers and the citizens know about the quality of the drinking water, the better it is for everyone, and to prompt more action if it is called for.

Mr. TIERNEY. Thank you, Mr. Chairman. I know my time is up, but the point on that was that had we had a better rule, as in line with other contaminants on that, then citizens would not have had to wait for all of this to unfold or whatever. Citizens could have taken some action and protected themselves.

Chairman TOM DAVIS. Thank you.

Mr. Van Hollen.

Mr. VAN HOLLEN. Thank you, Mr. Chairman. Obviously there is a lot of territory to cover here.

I would just like to go back to the issue of when you first learned of the problem and what notices were provided, because we have been focusing on 2002 and 2003. And the Washington Post had an article, and let me direct this first to Mr. Welsh, if I could. But the Washington Post had an article that said from July 2000 to June 2001, 50 houses were tested, and 7 houses were found to have lead levels that exceeded the EPA action level, the 15 parts per billion. According to the Post story, by invalidating some of those results and retesting some of the houses, WASA brought the number of houses with exceedances down from seven to four and, therefore, avoided the EPA trigger of the 10 percent trigger.

I want to know what you know about this particular issue. Does WASA have the authority to invalidate test results? And if you

could just provide the committee with all of the information that you have about this Washington Post story and the allegations made there.

Mr. WELSH. When I heard about the story, I asked the same questions about when and how samples could or couldn't be invalidated. And I understand that we were not requested to invalidate any samples. And we, in fact, went and looked at the actual raw data and the data that was reported to us and saw no evidence that samples had been invalidated.

So my information is that we did not approve the invalidation of samples, and we don't see any evidence that samples were invalidated.

Mr. VAN HOLLEN. Let me then ask WASA, whichever of the two gentlemen would like to answer the question. But, again, there is the Washington Post article that made these statements. I would be interested in your response to that, because the allegation is that much earlier than we are talking about, a year earlier than we are talking about, there were tests that indicated that lead levels exceeded the EPA requirements, and that by manipulating the results or retesting, you escaped the trigger. Could you please comment on that?

Mr. JOHNSON. Yes, sir. I would like to rather refer to what actually occurred during that period rather than trying to validate what was in—reported in the Washington Post. And as I understand the lead and copper rule, it provides that there are two ways to meet—once you have hit the trigger, you have to eliminate 7 percent of the lead service lines in the system in that year. We were—and there are two ways to accomplish that. One way is to physically remove the lead service lines, and another way is to retest. And if you retest, and the lead levels are below the action level, then you can literally take them off that list in order to meet the 7 percent.

We did about 580 some actual physical removals during that period and through testing got the number down from the 7 percent within the period that we had to get this done.

Mr. VAN HOLLEN. Let me make sure I understand you, because that was not my understanding of how it works.

Mr. WELSH. Mr. Van Hollen, I believe that there are two—perhaps it wasn't clear what the question was. Mr. Johnson is talking about the sampling—the lead service line replacement work that they needed to do. The article in the Post was not about that, but about the actual routine monitoring standards.

Mr. VAN HOLLEN. Exactly. If I can just go back.

Mr. JOHNSON. I misunderstood.

Mr. VAN HOLLEN. The assertion was this has to do with the test. I am not talking about the replacement of the pipes. I am talking about the water sampling, the testing. And the assertion is, and I want to get to the bottom of this, that in this period July 2000 to June 2001, there was water sampling that went on; that the water sampling—that the results indicated that you—that there was exceeding—we exceeded the EPA levels, but because of essentially retesting in order to get different results, WASA was able to not trigger that requirement. Are you not——

Mr. JOHNSON. I misunderstood the question.

Mr. VAN HOLLEN. Are you aware of that Washington Post article?

Mr. MARCOTTE. My name is Mike Marcotte. I am chief engineer/deputy general manager of the Authority, and, yes, I am aware of the article. Yes, I am aware of the sequence of events.

In the summer of 2001, there were, I believe, a total of seven samples that had exceeded the action level. I was advised by our then-water quality manager that she was reexamining, from a quality control standpoint, the conditions under which those samples had been taken, and had worked closely with the EPA staff contact to assure that her actions were appropriate, that they were aware of that. I can't say at high levels of EPA, but our EPA staff contact.

And that time three samples had been invalidated based on—in full compliance with the EPA rules.

Mr. VAN HOLLEN. Let me make sure I understand it, because my understanding from responses that we received from the EPA was that EPA did not invalidate.

Mr. MARCOTTE. The invalidation would have taken place by our water quality manager based on the quality control review that she carried out.

Mr. VAN HOLLEN. I am trying to understand, because you got a result.

Chairman TOM DAVIS. The gentleman's time is up. I will let you ask this last question.

Mr. VAN HOLLEN. Well, I am going to continue to pursue this in the next round, because it seems to me—what it looks like is you got a result that you didn't like because it took you over the trigger, and instead of living with the results and providing notices, and it would have triggered all of the requirements that we are talking about in terms of notices to people, instead of doing that, you decided to take a test again, and then you got the—all of the original tests showed one thing, you got another test that showed another.

Anyway I don't hear really consistent responses here. And my understanding is EPA cannot invalidate the tests, and yet it sounds like some of the tests were invalidated with the concurrence of the EPA. If you could just respond to that, and I will leave it at that, Mr. Chairman.

Mr. WELSH. And I just confirmed with my staff the information that I had before that we did not invalidate any samples. So if there is discrepancy there, we would be happy to look into it and give you further answers. But my answer is only EPA can invalidate the samples, and that we did not invalidate any samples.

Chairman TOM DAVIS. So what happened then?

Mr. MARCOTTE. My understanding is that our water quality manager invalidated those samples in a quality control mode after looking at the information and consulting with EPA.

Chairman TOM DAVIS. What I would like to find out is who they consulted with at EPA. I don't think you are alleging that EPA gave permission. I think this is important because there is still a lot of suspicion. You have Ms. Norton's questions going to this, that somehow we could have been a year ahead of this, solving this

problem, had we had appropriate notification a year earlier. It didn't happen.

With the questioning that is going on, we would like to get that information. Can you get that information?

Mr. MARCOTTE. We will endeavor to get that for you.

Chairman TOM DAVIS. Who was your water quality personnel that was talking to EPA?

Mr. MARCOTTE. At that time it was Seema Bhat.

Chairman TOM DAVIS. Is he still with you?

Mr. MARCOTTE. She is not.

Chairman TOM DAVIS. She is not with you now? She was terminated, as I understand it, for talking to EPA?

Mr. MARCOTTE. No, that is incorrect, but she was terminated from our employment in early 2003.

Chairman TOM DAVIS. OK. We are going to probably want to get into this a little bit later. I don't know that this is an appropriate forum for that, but I would like to get some answers to that, because there is a discrepancy here that really goes to the heart of WASA's role in notification. I think that is what——

Mr. VAN HOLLEN. Mr. Chairman, I understand that under the procedure, in order to invalidate a test, it has to be done by the EPA, and it has to be done in writing. So there would have to be some record.

Chairman TOM DAVIS. I think what he said in response to your question is that EPA didn't invalidate it, but they consulted, and they did it on their own. Is my understanding correct?

Mr. MARCOTTE. Yes.

Chairman TOM DAVIS. Which may or may not be legal, but we want to see if, in fact, Ms. Bhat, who is no longer there, did consult with anyone and who she consulted with and what actually transpired—I don't know the answer to that. But you can understand the concern here, and I think it goes to the heart of the whole issue in terms of how the notifications were conducted.

Let me ask Mr. Jacobus, you testified that you didn't consider chloramines to have an adverse impact on corrosivity. But at the time that you began to use them, there just wasn't a lot of scientific knowledge on that. On what basis did you decide to use chloramines?

Mr. JACOBUS. When we converted to chloramine, we, of course—any treatment change has to be taken very carefully and in compliance with other EPA regulations and in consultation with our customers so that we know what the probable effects would be on the distribution system.

Chloramine is a very commonly used disinfectant throughout the United States. Some places like Denver have used it since 1917. Philadelphia has used it over 50 years. So it is a proven technique for reducing disinfection byproducts.

Our chlorine-only treatment system could not meet the new 80 parts per billion of total trihalomethanes rule that was coming into effect, so after an engineering analysis, we worked with consultants looking at the various alternatives. We started to design the chloramine facilities that would change the process.

We were aware at that time of the science that indicated that the bacteriological activity could increase in the distribution system as

a result of a chloramine change through a process called nitrification of—the chloramine molecule has nitrogen in it. Nitrogen is a food. So if you saw increased bacteriological activity, nitrification, and ammonia occurring in the distribution system, that could then lower the pH of the water.

If I could just go back a moment and say that our corrosion control strategy was based, and is based still, on the pH of the water. We want the pH of the water to be as high as possible to reduce the corrosivity. So we knew if through the nitrification process it could occur, convert it to chloramines, the pH of the water went down, that could show—we could infer from that there could be increased corrosivity.

So that was well known, and we prepared for that. We prepared for that by flushing the distribution system to get all of the debris and any biofilm out prior to conversion. I say "we;" we collectively with our customers in Arlington, Falls Church and the District of Columbia.

And then when the conversion occurred on November 1, 2000, we had a contractor in place. And he looked specifically for—on a consistent interval, over a 6-month period for evidence of nitrification. Since then we continue in our laboratory analysis to look for evidence of nitrification in the distribution system, and there has been no evidence of that. That was good news.

The other good news was that as we looked at the pH throughout the distribution system, it did not depress for any reason, and so our conclusion from that was that the possible corrosive effects of the chloramine conversion did not occur through a nitrification mechanism.

Any direct effect of chloramine on lead was not known to us. We were aware of scientific papers that had been written that looked at the corrosive effect on elastomers, plastic parts where your toilet may have some kind of effect as this newer water went through the plastic or the rubber pieces in your toilet. We knew that had been anecdotally reported and reported in the science, but we saw no evidence of that.

So I think the answer to your question is that we made the decision based on the disinfection byproduct rule. That has worked very, very well. And we looked for and did not find a change in the pH, and therefore the corrosivity did not appear to change. We still don't know if it did change as a result of the conversion that has now increased the leeching that we are seeing in the lead services and in the fixtures, in solder joints and any fixtures in the homes.

Chairman TOM DAVIS. Has the science changed on this over time?

Mr. JACOBUS. I think as in all cases, sir, the science is responding to issues, and we learn more and more as we go along. And while I cannot definitively say that there is a connection, if there is a connection, I think—I don't think, I know—we will contribute to that evolution of science through EPA. Our consultants, one of the panel members you have today is an expert in that area, and we are going to all work together.

But I would like to repeat what I said in my opening remarks that we very strongly believe, based on our scientific consultants, that the chloramine can remain in place as the disinfectant to pro-

tect the public from the disinfection byproducts, and we can add additional corrosion inhibitors, change the chemistry of the water a little bit to overcome its current corrosivity, and as a result lower the lead concentrations that we are seeing in some of those samples being taken.

Chairman TOM DAVIS. Let me just ask the Region Administrator, EPA Region III asked the D.C. Public Schools to comply with the Lead Contamination Control Act of 1988 to mandate—to test school water for lead, replace coolers that had lead-contaminated waste. Haven't you?

Mr. WELSH. Yes.

Chairman TOM DAVIS. You have done that. You are doing it now?

Mr. WELSH. I understand the compliance with that rule was prior to this. That was a rule that required that they discontinue the use of those types of fixtures. So that is not specifically part of the lead and copper rule, it is a separate rule and was complied at a different point in time.

Chairman TOM DAVIS. Are they in compliance now as far as you know?

Mr. WELSH. It is not a compliance issue, sir.

Chairman TOM DAVIS. OK. Has WASA violated any EPA national primary drinking water regulations for lead since its inception in 1996?

Mr. WELSH. We are looking closely at the—complying with the public education issues. In our review, we have seen elements where they did, in fact, do parts of the public education that were required as stated. There were others that—where it was not exactly right or maybe not timely. But we are continuing to look at that issue.

Chairman TOM DAVIS. Would the withdrawal of samples along Mr. Van Hollen's questioning potentially be a violation?

Mr. WELSH. The invalidation of samples?

Chairman TOM DAVIS. Yes.

Mr. WELSH. Yes. My understanding is that only EPA can invalidate samples, and that we were not requested to invalidate.

Chairman TOM DAVIS. So that could potentially be another violation?

Mr. WELSH. Yes. That would be part of the review that we are doing. And given the interest and what I have heard, we will take a close look at that.

Chairman TOM DAVIS. Thank you very much.

Ms. Norton.

Ms. NORTON. I do have some substance of questions, but I will tell you, while you are fixing the science, assuming you can, what we have to be assured of is that the public will always have prompt notification.

Now, I have already indicated that I have severe problems with how you notified people in their water bills. OK. EPA had yet another way to—for WASA to notify the public. And here is something very serious, I think. 40 CFR 141.85(b), it is entitled, Contents of Broadcast Materials. It concerns the public announcement that the water distributor is supposed to make in the event that we have higher lead levels than allowed, and it says: A water system shall include—shall include—the following information. Now,

I am not going to read—I am going to just read the information that it says to include. It says, why should everyone want to know the facts about lead in drinking water? Then it says: Because unhealthy amounts of lead can enter the drinking water through da, da, da, da. Then it goes on to say in the second paragraph: To have your water tested for lead or to get, "more information about this public health concern."

Now, let me tell you what WASA did. First of all, it rewrote the words entirely. Do you know why we put words in regulations? Because that is the best way to inform the public and to comply with the law is to use the words that are right in the regulations. There are a few regulations that say, do this. This says "information" this time. It doesn't say the exact words, and WASA apparently took advantage of that. But in taking advantage of it, WASA included the words "unhealthy amounts of lead" in the first paragraph, and in the second paragraph excluded the words "more information about this public health concern."

Now, why should I believe that was not deliberate, taking out the very words in a public service announcement that give the best information to the public that you ought to do something because your health may be at risk? Why were those taken out, and why did EPA allow those words to be taken out?

First WASA.

Mr. JOHNSON. Ms. Norton, certainly as general manager of the Water and Sewer Authority, I have to assume full responsibility for anything—any activities that are undertaken by the Authority. I do not recall having personally read the notice when it went out, and I really cannot explain why that language was not included in that notice, assuming that was what went out.

Ms. NORTON. Well, EPA, that is why we have you watching—I hope we don't have the fox watching the chicken coop, but we have you watching to see whether WASA messes up. This is a clear mess-up. When you take out the words about health concerns, unhealthy, take out those words, it is hard for me to avoid the conclusion that you are doing so on purpose, because you left most of the other language, and when you rewrite it in the first place, I wonder what you are doing. But why didn't EPA catch it and call them on it?

Mr. WELSH. It is consistent with my information that the PSA did omit some of the words, so that is one of the areas that has been identified where the action of WASA wasn't fully consistent with the regulation, and we do need to do a more aggressive job of following up on those. We are doing the full review of all of the elements to see and identify all of the areas where there may have been deficiencies. But that is consistent with the information I have that there were words omitted from the PSAs.

Ms. NORTON. Will you be looking at any notices in any water bills beforehand in the future so that we can be assured that at least this problem of notice to the public is cleared up?

Mr. WELSH. Yes. We have already changed our oversight procedures. It is set up for us to review after the fact the report on the public education requirements, but certainly we are going to be more aggressive in trying to work up front and to have some more—not just the technical review—it is, of course, important that

we do a technical review to see the words that are required are there—but in addition to that to make sure that we give the technical folks the help to be able to figure out whether not only are all of the words included, but whether this announcement is something that someone is likely to read or throw away.

So we do want to do a much better job of earlier in the process identifying where there are deficiencies, so we can earlier require that those deficiencies be addressed.

Ms. NORTON. That is the least we are entitled to, we, the public, while you are trying to find out what the causes are.

Mr. WELSH. I agree.

Ms. NORTON. Do you have something further to say, Mr. Johnson?

Mr. JOHNSON. Yes, ma'am, Ms. Norton. It has just been called to my attention that one of the things that happens with public service announcements is typically we don't get very much response from the media in terms of running them.

We did take it upon ourselves in October 2003—August 2003—to send out a notice that does describe health effects, lead in water, how lead enters the drinking water, and steps to reduce exposure to lead in water, in addition to providing some general information in a mailing that was included with all of our customer bills.

Ms. NORTON. The operative words, Mr. Johnson, are unhealthy, unhealthy amounts of lead. The operative words are, more information, public health concern. And even in what you have read back to me, I don't hear the operative words. That is why only the commitment I have just had from Mr. Welsh that they will look at any notice you send out ahead of time can possibly satisfy our concern at this time.

[The information referred to follows:]

EPA'S NOTIFICATION REQUIREMENT FOR WATER BILL

40 CFR 141.85(c)(2) A community water system that exceeds the lead action level . . . . shall, within 60 days:

(1) Insert notices in each customer's water utility bill containing the information in paragraph (a)(1) of this section, along with the following alert on the water bill itself in large print:
"SOME HOMES IN THIS COMMUNITY HAVE ELEVATED LEAD LEVELS IN THEIR DRINKING WATER. LEAD CAN POSE A SIGNIFICATNT RISK TO YOUR HEALTH. PLEASE READ THE ENCLOSED NOTICE FOR FURTHER INFORMATION."

[Capitalization included in the original.]

EPA PUBLIC SERVICE ANNOUNCEMENT REQUIREMENT

40 CFR 141.85(b) Content of broadcast materials.
A water system shall include the following information in all public service announcements...

(1) Why should everyone want to know the facts about lead and drinking water? Because unhealthy amounts of lead can enter drinking water through the plumbing in your home. That's why I urge you to do what I did. I had my water tested for [insert free or $ per sample]. You can contact the [insert the name of the city or water system] for information on testing and on simple ways to reduce your exposure to lead in drinking water.

(2) To have your water tested for lead, or to get more information about this public health concern please call [insert the phone number of the city or water system].

[Emphasis added]

WASA'S PUBLIC SERVICE ANNOUNCEMENTS

October 30, 2002

PUBLIC SERVICE ANNOUNCEMENT ON LEAD IN HOME PLUMBING

The DC Water and Sewer Authority (WASA) wants District of Columbia residents to know the facts about lead and drinking water because potential elevated levels of lead can enter drinking water through your home's plumbing system.

For additional information on testing and easy ways to reduce exposure to lead in your home plumbing, DC residents may contact the District of Columbia Water and Sewer Authority's Water Quality Division at (202) 612-3440. Residents may also visit WASA's Website at www.dcwasa.com.

September 30, 2003

PUBLIC SERVICE ANNOUNCEMENT ON LEAD IN HOME PLUMBING

Why should you want to know the facts about lead and drinking water? Because the plumbing components in your home can contribute lead to your drinking water. That's why the District of Columbia Water and Sewer Authority and the Environmental Protection Agency recommend that you have water tested for lead. Please call 202-787-2732 for further information. If you have other water quality concerns, please contact the DC Water and Sewer Authority at 202-612-3440.

Chairman TOM DAVIS. Thank you.

Mr. Moran.

Mr. MORAN. Thank you very much, Mr. Chairman. I want to followup, I guess, a little bit with Ms. Norton's line of questioning, because this may be our best opportunity to alert the public through the media on what the real health concerns are. I want do get a handle on that.

Why do we say that 15 parts per billion is an actionable level? And also the pragmatics there, the practical effects of what you are telling people to do, I am almost—if I were a cynic, I would think that you all have stock in bottled water companies, because if you are telling people to run water for 10 minutes, they are not going to do that. I am not going to do that. You are not going to do that. None of you are going to run your water for 10 minutes. Not only are you paying for it, but if you want to use the—if you want a drink of water, you are not going to wait for 10 minutes. Everyone is going to flock out and clear the shelves of bottled water if what you are telling us is that you are not supposed to use the water until you have run it through the faucet for 10 minutes. I thought it was for a few minutes—you know, a few seconds or something. God sakes, 10 minutes is a long time. And we are also told, at least in Arlington, that some of the water tested higher for lead after they had been running it through the faucet. So I am not sure that flushing out your system necessarily helps.

I don't think we really have a handle on what we want to tell the public. And I don't fully understand, and I would like to—maybe we are going to get this from the next panel, but EPA must understand, while all of you are experts, how serious is this at this level? How dangerous is it to people's health? And you are telling—the guidelines say that once you have been beyond the level, you have 10 years, is what I read; you have 10 years to fix the situation. Seems to me that the damage is going to be far more severe in the process of fixing it.

Here, I am going to ask this question, because I was asked to ask it by Arlington County. Could you provide this committee with an answer with regard to a commitment by the administration that someone from the Centers for Disease Control is going to be available this afternoon to begin coordination with Virginia and the Arlington County Public Health Department to review the latest test results beginning early next week?

In other words, we—what they want, Arlington County wants—is to get somebody from CDC in to tell us how bad this is, how serious this is, how should our people be reacting, and what could almost be called a paranoid way that they are reacting now.

Mr. WELSH. On the CDC matter, I do know that we have had the assistance of personnel from CDC in dealing with the situation in the District. So we are certainly happy to request that they provide the same assistance to Arlington. They are not folks who report to me, so I would have to make the call to CDC and see if we can get that, but I don't see why that should be a problem.

Mr. MORAN. I think we need CDC in, and we need to know from the EPA what does it mean that if you got—what is 300 as a multiple of 15? 20 times. And many of them were 200 times higher, apparently, from newspaper articles. What does that mean to the

health? I mean, how serious is that? Are you really going to give them 10 years to fix this, or how—what are you telling them in terms of timeframe and urgency?

Mr. WELSH. There is extreme urgency.

Mr. MORAN. Extreme urgency?

Mr. WELSH. In two areas. To make sure that the folks who can't—who have been advised not to drink the water are provided with alternate water or filters, then to work on the work that Mr. Jacobus was talking about as quickly as possible, to be able to identify the best way of handling the corrosivity, so that we see this problem discontinued.

Mr. MORAN. Is it serious enough that the government should be providing filter—the stores, I understand, have been bought out of filters. I mean, people are rushing to buy the filters from the stores, not to mention bottled water. Filters are expensive. Many people can't afford them.

What role do we have? I mean, if this is as serious as it could be, maybe we have some responsibility to act in a more direct manner with these homes that we know are drinking what must be toxic levels of lead in the water.

Mr. WELSH. We do have the authority—in a situation where we had to order alternate water to be provided, we have the authority to order that under the 1431. The obligation rests with the person that we are ordering, so that doesn't bring money with it. So in a situation where we have determined that we did need to require that, that is an authority that we have to do. It doesn't solve the issue of how they get paid for. So if that situation here or elsewhere was deemed to be necessary, we have the authority to order that.

Mr. MORAN. Has anything like this happened anyplace else in the country to this degree? I mean, is there any precedent for this?

Mr. GRUMBLES. There is precedence; not to this degree, though, Congressman. There are instances——

Mr. MORAN. So this is the worst case that has ever happened in the country in terms of the level and length of exposure to lead through the drinking water; is that a fair statement?

Mr. GRUMBLES. Staff is informing me that at Superfund sites there are lead contamination problems.

Mr. MORAN. Hazardous material sites? Well, yeah.

Mr. GRUMBLES. From the perspective of the lead in the drinking water in the system, there are cities in the country that have exceeded action levels under the lead and——

Mr. MORAN. Sure. But an action level is 15 parts per billion.

Mr. GRUMBLES. I personally am not aware. I don't know that staff is aware of a situation of this degree.

Mr. MORAN. So this is the worst that has ever happened in the country?

Mr. GRUMBLES. Well, worst in terms of—from my perspective.

Mr. MORAN. Well, the level and length of exposure.

Mr. GRUMBLES. In terms of the loss of confidence in the quality of the drinking water.

Mr. MORAN. I am wondering if we need to look at other precedents, or whether this sets a precedent and we need to take some innovative or original action.

Chairman TOM DAVIS. Mr. Moran, let me just ask. The time is up, but if I can just dovetail onto that. Just focusing on EPA's emergency powers, are you actively considering invoking them in this situation?

Mr. WELSH. I would say yes. We are working with the city to make sure that the things that we think are necessary to provide safe water to the residents are done, and we are fully prepared and ready to act if those things aren't happening.

Chairman TOM DAVIS. Well, we've seen that the lead levels are potentially exceeding the—that they are exceedingly high and widespread, and this is obviously a very serious situation. So EPA is considering invoking its emergency powers?

Mr. WELSH. Yes, based on our conversations with the city about the steps that are being taken to provide for the——

Chairman TOM DAVIS. Any idea how quickly this could occur?

Mr. WELSH. We would be ready immediately if we determined that the measures weren't being taken to provide safe water for the public health.

Chairman TOM DAVIS. Are you close to determining that?

Mr. WELSH. We've been working all week with the city to get that information and working—we are—those conversations have continued. So if we had information that we could feel assured that the—all the necessary steps are being taken, we might determine that we don't need to do it. If we were still uncertain that the necessary steps were being taken, we would be ready to do that immediately.

Chairman TOM DAVIS. So it could—I mean, the conversation is, you're obviously not going to commit to it but it could happen any time basically?

Mr. WELSH. Yes, sir.

Chairman TOM DAVIS. OK. That's what I'm wondering.

Mr. Van Hollen.

Mr. VAN HOLLEN. Thank you. Thank you, Mr. Chairman. I'd just like to pursue a little further the issue of corrosion control, and the role it may have played here and the role it could play elsewhere in the country. My understanding is, the Safe Drinking Water Act regulations put a premium, they put an emphasis on the question of providing corrosion control. Is that right?

Mr. GRUMBLES. That's correct.

Mr. VAN HOLLEN. And I further understand that the corrosion control plan that EPA approved in February 2002 for the District of Columbia and its role of acting as a State essentially assumed the use of chlorine. Is that right?

Mr. WELSH. I know that we approved the chlorine control plan. I'm not sure which plan—is it the——

Mr. VAN HOLLEN. I'm sorry. In February 2000, it assumed the use of chlorine. Is that right?

Mr. WELSH. Yes. That's correct, sir.

Mr. VAN HOLLEN. Even though EPA, as I understand it, had been informed by the Corps shortly before that they did not intend to use chlorine, but intended to use chloramines in the water. Is that right?

Mr. WELSH. It was in 2000 that the plan said that they would use chloramines rather than chlorine. So the chlorine had been ap-

proved, and then a plan to use chloramine was also—did we approve that? OK. We didn't have to approve that, but we consulted closely with them and agreed that seemed to be an appropriate treatment.

Mr. VAN HOLLEN. That's what I want to get at.

As I understand it, the plan that you approved in 2000, February 2000, was based on the assumption that the Corps was using chlorine. Is that right?

Mr. WELSH. Correct.

Mr. VAN HOLLEN. But in the end, the Corps changed its plan and decided that it was going to use chloramines, right?

Mr. WELSH. Correct, and they did that in consultation with us and others.

Mr. VAN HOLLEN. So my question is, what additional studies, if any, did EPA do? What literature did it consult to determine whether or not the use of chloramines would not create a greater corrosion problem than the chlorine?

Mr. WELSH. I know that there is a whole body of scientific knowledge that treats that question, and that body of knowledge was consulted.

We also wanted to make sure that the Washington Aqueduct—and they did—put in place a sampling plan to pick up indications that there would be a change in the corrosivity of the water and that those samples—they put in place a plan to do those samples and took those samples, and it did not indicate anything that caused us to take alarm.

So we consulted the bodies of knowledge that there were about whether that would be effective, went through the complicated chemistry of trying to balance the—not trading one thing off for another. And in order to try to monitor for whether something—a tradeoff happened that turned out to be less than beneficial, we asked them to do sampling, and they were happy to do that sampling. So we put the steps in place that we thought would be able to indicate whether this was causing a problem. In fact, those samples for changes in corrosivity did not presage the problem that ultimately showed up, the lead in the tap.

Mr. VAN HOLLEN. OK. Let me ask you, one of the measures that's being taken now is the partial replacement of pipes, where WASA has been replacing the lead pipes up to the—I guess the part of the pipe that is under the owner's control.

There has been some indication that, in fact, that could actually exacerbate the problem. Could you comment on that? I mean, there's some suggestion that when you take a copper pipe and you link it up with a lead pipe, although WASA can say, "we've done our part," in fact you could have left the homeowner in a worse situation. Could you respond to that?

Mr. MARCOTTE. That is a very, very good question, Mr. Van Hollen, and we have a requirement, once we have cut that pipe and have done the reconnection on the public side, to test the water after 72 hours of service. And when you disturb that pipe and have done a number of things to it, it's possible that you can get elevated lead levels that are higher than what it was before you actually made the change. And certainly the person is left with as bad a problem as they had before you changed it, because they still

have a section of lead pipe the water will rest in when it's not being used and then will pass into their household system.

Mr. VAN HOLLEN. Right. I'm concerned about this, because I know the regulations require that you either do this testing or replace the pipes, but it's kind of silly to go through the motions of partial replacement of pipe if it doesn't, No. 1, cure the whole problem or, in fact, may make it even worse.

On a related issue, my understanding is that there has been raised the question of how EPA tests for water and the whole idea that the water that is first out of the tap may be more contaminated than later waters. There have been suggestions, in fact, and in DC apparently is the case, that after the water has been allowed to run a little more, it actually shows higher lead content.

And so my question, I guess, for the EPA officials is, is that right and what are the implications for the testing protocols around the country with respect to lead?

Mr. WELSH. We certainly—the best information is to get the whole profile of the first draw and throughout the subsequent periods, additional liters as you test through and get a whole profile of what is happening at the tap.

Do you have specific information on protocol?

Mr. GRUMBLES. No. I just want to say to the Congressman that the question is a good one. It's one that we're looking—you know, from a national perspective, if we do have a testing protocol, does it need to be revised? We're more than willing and we've been talking over the last several hours about the benefits of getting some scientific groups, research foundations, to look at specifically, you know, has the science changed, what are the results, let's look at the testing protocols; and that's something that, from a national perspective, we're continuing to pursue.

Mr. VAN HOLLEN. Thank you, Mr. Chairman.

Chairman TOM DAVIS. OK. Thank you very much.

I want to let the panel go, but I think Ms. Norton has a couple of questions for the record she wants to put in. Then I'll dismiss the panel. I appreciate your being here. We do have some followup to some of the questions that we've asked to try to get at.

Ms. Norton.

Ms. NORTON. I would like to be clear, Mr. Jacobus. You did a complete corrosion control study when chlorine was in the water, but not a complete corrosion control study when chloramines were added to the water. Is that true?

Mr. JACOBUS. That is correct, ma'am.

Ms. NORTON. So this is real important, because the best hypothesis we have is that chloramines—you say no, you don't think chloramines are the problem, or at least you have testified that you didn't think there was corrosivity from chloramines. But we do have this before-and-after evidence that simply needs to be cleared up.

And one way to have—when you're putting—you were trying to get rid of chlorine which may cause cancer in some circumstances. We may have had an indication that we were making the problem worse by trying to make it better, and one of the things we do to keep that from happening is simply to do the proper studies. And it seems to me, in hindsight, which should have been foresight,

that if you're going to add an entirely new substance to the water people are going to drink, you ought to do a complete study, the corrosion control study. And I must ask you, are you doing such a study now, a complete corrosion control study so that we can know whether chloramines leach lead from pipes?

Mr. JACOBUS. Yes, ma'am. Just a second and I can tell you what we are doing.

Ms. NORTON. I just want to know, because the chairman wants me to move on. Are you doing the complete study that has not, until now, been done? You've been doing sampling. I want to know if you're doing the complete study.

Mr. JACOBUS. We have engaged the team and we've engaged consultants, and we have two sets of science experiments. One is working now under the control of the District of Columbia Water and Sewer Authority. The other is coming together through our consultants, and we will have both desktop, bench-type scale and full-scale analyses of the effects of the corrosion.

And in addition, though, we anticipate incorporating into that analysis the addition of more chemicals that are currently not being used, corrosion inhibitors, which would be more strong, to reverse the effects of the corrosivity that we're seeing. So I can——

Ms. NORTON. At the very least, that should be done. We need to know, though, what is causing this problem so we can get rid of it.

But, Mr. Welsh, we're going to ask you to make sure that this complete study is done. You say you consulted. Obviously, consultation was not enough.

But very quickly, we talked about these filters. I understand that these filters, which first of all are only good up to 20,000 parts per billion, are only good for 2 months. Somebody is giving you the filters to distribute. Who is going to pay for the filters, particularly for people who can't afford filters, which are a whole lot of people in the District of Columbia, after you run out of donated filters? And are these filters good enough if they filter only up to 20,000 parts per billion?

Mr. WELSH. I'm sorry. I was just going to say that part of the subject of our discussion with D.C. is to make sure that the filters that are provided are ones that will adequately do the job. So we're carefully looking at that from the EPA's standpoint to see if we're satisfied that's the appropriate filter. Sorry to interrupt.

Ms. NORTON. Please don't come back here with filters that then we see lead levels far above what filters could have screened.

Go ahead, Mr. Johnson.

Mr. JOHNSON. Thank you, Ms. Norton. We have consulted with the Health Department and, I understand, EPA, in ensuring that we had NSF-certified filters that will remove lead, and the ones that we have acquired will remove lead from 180 parts per billion down to something below—or at the level of detectability, nondetectability.

Ms. NORTON. If it goes up to 180 parts per billion, that would be very good.

Let me ask you this. In the testimony—this is a town, even with all the single-family homes, people rent. This is a renter's town. Now, Mr. Gerstell said in his testimony with all the qualifiers that

we've gotten used to from all of you, as far as we know, apartment buildings and commercial office buildings are not generally affected since they do not usually have lead service lines; and until recently there were no—there was no imminent reason to update even the information about the 23,000.

Most of the people in the District of Columbia live in apartment buildings. By the way, they don't get their water bills. The water bills sometimes go to the owner of the building. Shouldn't they be informed some way or the other if you're in an apartment building about this problem, since there's nothing to make the owner go forward and inform people so that they can be on notice maybe to use bottled water or filters or something?

Mr. JOHNSON. Yes, ma'am, and we have sent notices to all 300 and some household—300,000-and-some households in the District of Columbia through a mass mailing which indicated literature through the District of Columbia Health Department, the Water and Sewer Authority and from EPA advising and providing those directions.

Ms. NORTON. One last notion. I can understand, Mr. Welsh, your reluctance to invoke your emergency powers. The District was under emergency powers beginning in 1993. It took them 100—a couple of years, I'm sorry, to get off of it. And the reason I think that they were invoked against the District then was that WASA was on its knees. The District was so out of compliance that the only way you could make sure that the District would do what it was supposed to do was to invoke those powers. And I take it that one of the reasons that you don't want to invoke them now is because you see the District cooperating.

Let me tell you what I think. If you're not going to use your emergency powers, it should be required—at the very least, given all the confusion that abounds, it seems to me that the District, all of the parties involved, the Health Department, WASA, all the parties involved—should be required to submit a coherent, written plan which would include the measures that are being taken to correct the problem, the measures that are being taken for notification of residents of the problem and the measures that are being taken to provide the necessary protection for residents, particularly those who cannot afford or are least likely to have notice that they should take measures themselves. I have in mind low-income, modest-income people, especially renters, the elderly and other vulnerable populations.

I mean, that is just what occurs to me off the top of my head is the absence of something in writing that I think puts us all—that is coherent, that involves everyone, that makes us all uneasy.

Mr. Welsh.

Mr. WELSH. I would say we're not reluctant to use those authorities. We want to make sure we use those appropriately, and we're looking closely at the actions that are being taken by others and we——

Ms. NORTON. If you're not reluctant to use them, why haven't you used them? We can't imagine a worse crisis than this.

Mr. WELSH. I understand, and we are working to make sure that the steps, much like are being described, are taking place—are being taken; and that we can see the actual plans and that those

plans are being implemented. So those are the things that we have been working with the city on in the past several days.

And in addition, on the issue of corrosivity, we do have a plan that sounds like what you describe that will be released Wednesday. The technical working group is going to give its first recommendations as to how best to move forward on addressing the issue of corrosivity. So I understand your advice, and we will certainly use that as we look very closely at the situation to determine what the appropriate step is.

Ms. NORTON. Thank you, Mr. Welsh.

Mr. Chairman, could I ask for certain records to be submitted for the record.

Chairman TOM DAVIS. Yes.

Ms. NORTON. Could I ask all three of you to commit to submit for our records all of the records of lead results that EPA received for the District, beginning with 1991, all the records documenting EPA's review of the Corps' control—corrosion control plan, the records evaluating D.C.'s distribution system survey?

I'd like to have that commitment from all of you. Do I have that commitment from all of you?

Chairman TOM DAVIS. Do you have a problem with that, Mr. Welsh?

Mr. WELSH. No, I have no problem.

Chairman TOM DAVIS. Thank you very much.

I want to thank this panel. I know it has been a long morning for you. The committee will take a 2-minute break while we bring the next panel up to the front and change the name tags.

[Followup questions and responses follow:]

March 23, 2004

Mr. Thomas P. Jacobus, P.E.
General Manager
Washington Aqueduct
U.S. Army Corps of Engineers
5900 MacArthur Boulevard, NW
Washington, DC 20016

Dear Mr. Jacobus:

On March 5, 2004, the Committee on Government Reform held a hearing entitled "Public Confidence, Down the Drain: The Federal Role in Ensuring Safe Drinking Water in the District of Columbia." We received testimony from you on behalf of the U.S. Army Corps of Engineers' Washington Aqueduct at that hearing.

As a result of the hearing, the Committee has a number of questions for the hearing record concerning Washington Aqueduct's role in exercising its responsibilities to prevent lead contamination in tap water in the District of Columbia drinking water supply. Those questions are as follows:

1. It has been widely speculated that chloramines used to kill bacteria may be more corrosive to lead pipes. What steps have been taken to further investigate that theory? Prior to changing the treatment process to chloramines, did Washington Aqueduct conduct a literature review or any direct research into the potential relationship between chloramines and corrosivity? If not, why not?

2. Was anyone at Washington Aqueduct notified of or provided the 2000-2001 lead monitoring results showing four samples over 15 ppb, of which two were over 100 ppb? If so, who received the notification or results and when? Were they viewed as an indicator of a potential increased corrosivity of the water?

3. When was anyone at Washington Aqueduct informed of the exceedence of the lead action level in 2002? Who received such information and was this considered to be an indicator of a potential increased corrosivity of the water? What specific actions, if any, did Washington Aqueduct take upon receiving this information?

4. EPA commissioned research on corrosivity issues in the District's water in May 2003. What was Washington Aqueduct doing at that time to address the issue?

5. When was anyone at Washington Aqueduct first informed of any of the sampling results from WASA's tests of lead service lines in the summer of 2003? Who received such information and were the results determined to indicate increased corrosivity of the water? What specific actions did Washington Aqueduct take in response to this information?

6. It appears that chlorine, chloramines, and phosphate addition all potentially have significant drawbacks. At the March 5, 2004, hearing in the House Committee on Government Reform, one witness, Mr. Erik Olson with the Natural Resources Defense Council, urged Washington Aqueduct to upgrade to modern water treatment methods, such as granular activated carbon and UV disinfection or ozone. Is Washington Aqueduct evaluating the benefits and costs of upgrading its water treatment plants in the District? Please describe the scope and method for any such evaluation. If not, why is Washington Aqueduct not considering this option?

7. What steps is Washington Aqueduct taking to reassess and manage the combination of treatment methods needed to reduce corrosivity of the water supply and maintain required protection against harmful contaminants found in drinking water?

Please provide answers to these questions by April 9, 2004.

Sincerely,

Tom Davis
Chairman

Henry A. Waxman
Ranking Member

Eleanor Holmes Norton
Member of Congress

Chris Van Hollen
Member of Congress

DEPARTMENT OF THE ARMY
WASHINGTON AQUEDUCT
U.S. ARMY CORPS OF ENGINEERS, BALTIMORE DISTRICT
5900 MACARTHUR BOULEVARD, N. W.
WASHINGTON, D.C. 20016-2514

April 19, 2004

Office of the General Manager

Honorable Tom Davis, Chairman
Committee on Government Reform
House of Representatives
2157 Rayburn House Office Building
Washington, DC 20515-6143

Hand delivered via courier

Dear Mr. Davis:

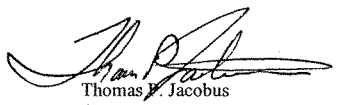
This responds to your March 23, 2004 letter in which you asked us to provide certain information for the record of the March 5, 2004 hearing by the Committee on Government Reform entitled, "Public Confidence, Down the Drain: The Federal Role in Ensuring Safe Drinking Water in the District of Columbia."

You asked for all records including studies, evaluations, and communications relating to the adequacy or effectiveness of the corrosion control plan for the District of Columbia water distribution system in reducing lead levels both before and after the switch to chloramines. A listing of the documents we are providing is attached to this letter. The documents themselves will be delivered in a package along with this letter.

You also asked for all test results for lead samples from the distribution system and taps for the District of Columbia and other portions of the Washington Aqueduct's service area in Northern Virginia from June 1991 to the present. I spoke to Mr. John Hunter of the Committee staff on March 30 to explain what data we have available. I am enclosing with this letter the results of lead analysis of water samples taken from the raw water and the effluent of the two treatment plants. We have done analysis for our customers (i.e., the District of Columbia Water and Sewer Authority (DC WASA) and Arlington County and Falls Church) but we normally account for those samples upon their receipt and during processing by a sample number which does not necessarily give us the actual location that the sample was drawn from. I understand that the Committee has requested this information directly from DC WASA. I believe that they are the beet source of complete information that would be response to your request. If you need similar complete information pertaining to the distribution systems of Arlington County and Falls Church, Virginia their public utilities offices would have that.

If you have any additional questions or require any clarification of the responses we have provided, I may be reached at 202-764-0031.

Sincerely,



Thomas B. Jacobus
General Manager

Attachments

Washington Aqueduct Lead Data

1991 - Present

Collection Date	Raw Water (ug/L)	Dalecarlia Effluent (ug/L)	McMillan Effluent (ug/L)
January-91	ND	ND	ND
February-91	ND	ND	ND
March-91	ND	ND	ND
April-91	ND	ND	ND
May-91	ND	ND	ND
June-91	ND	ND	ND
July-91	ND	ND	ND
August-91	ND	ND	ND
August-91	ND	ND	ND
September-91	ND	ND	ND
October-91	ND	ND	ND
November-91	ND	ND	ND
December-91	10	ND	ND
January-92	ND	ND	ND
January-92	ND	ND	ND
February-92	ND	ND	ND
February-92	ND	ND	ND
March-92	ND	ND	ND
April-92	ND	ND	ND
May-92	ND	ND	ND
June-92	ND	ND	ND
July-92	ND	ND	ND
August-92	ND	ND	ND
September-92	ND	ND	ND
October-92	ND	ND	ND
November-92	ND	ND	ND
December-92	ND	ND	ND
January-93	ND	ND	ND
February-93	ND	ND	ND
March-93	ND	ND	ND
April-93	ND	ND	ND
May-93	ND	ND	ND
June-93	ND	ND	ND
July-93	ND	ND	ND
August-93	ND	ND	ND
September-93	ND	ND	ND
October-93	ND	ND	ND
November-93	ND	ND	ND
December-93	ND	ND	ND
December-93	ND	ND	ND
January-94	ND	ND	ND
January-94	ND	ND	ND
February-94	ND	ND	ND
March-94	ND	ND	ND
April-94	ND	ND	ND
May-94	ND	ND	ND
June-94	ND	ND	ND
July-94	ND	ND	ND
August-94	ND	ND	ND
September-94	ND	ND	ND

Washington Aqueduct Lead Data

1991 - Present

Collection Date	Raw Water (ug/L)	Dalecarlia Effluent (ug/L)	McMillan Effluent (ug/L)
October-94	ND	ND	ND
November-94	ND	ND	ND
December-94	ND	ND	ND
January-95	ND	ND	ND
February-95	ND	ND	ND
March-95	ND	ND	ND
April-95	ND	ND	ND
May-95	ND	ND	ND
June-95	ND	ND	ND
July-95	ND	ND	ND
August-95	ND	ND	ND
September-95	ND	ND	ND
October-95	ND	ND	ND
November-95	ND	ND	ND
December-95	ND	ND	ND
January-96	ND	ND	ND
February-96	ND	ND	ND
March-96	ND	ND	ND
April-96	ND	ND	ND
May-96	ND	ND	ND
June-96	ND	ND	ND
July-96	ND	ND	ND
August-96	ND	ND	ND
September-96	ND	ND	ND
October-96	ND	ND	ND
November-96	ND	ND	ND
December-96	ND	ND	ND
January-97	ND	ND	ND
October-97	ND	ND	ND
January-98	ND	ND	ND
April-98	ND	ND	ND
July-98	ND	ND	ND
January-99	ND	ND	ND
October-98	ND	ND	ND
July-99	ND	ND	ND
April-99	ND	ND	ND
August-99	ND	ND	ND
September-99	ND	ND	ND
October-99	ND	ND	ND
November-99	ND	ND	ND
December-99	ND	ND	ND
January-00	ND	ND	ND
2/8/2000	ND	ND	ND
3/1/2000	0.7	ND	ND
4/4/2000	ND	ND	ND
5/3/2000	ND	ND	ND
6/23/2000	ND	ND	ND
7/10/2000	ND	ND	ND
7/10/2000	0.7	2.0	ND
8/3/2000	ND	ND	ND

Washington Aqueduct Lead Data

1991 - Present

Collection Date	Raw Water (ug/L)	Dalecarlia Effluent (ug/L)	McMillan Effluent (ug/L)
10/6/2000	ND	ND	ND
11/3/2000	ND	ND	ND
12/28/2000	0.6	ND	ND
1/5/2001	ND	ND	ND
2/2/2001	0.8	ND	ND
March-01	ND	ND	ND
April-01	ND	ND	No sample
May-01	ND	ND	ND
June-01	0.6	ND	ND
July-01	0.7	ND	ND
August-01	ND	ND	ND
September-01	ND	ND	ND
October-01	ND	ND	ND
November-01	ND	ND	ND
December-01	ND	ND	ND
January-02	ND	ND	ND
February-02	0.5	ND	ND
March-02	ND	ND	ND
April-02	ND	ND	ND
May-02	1.1	ND	ND
June-02	ND	ND	ND
July-02	1.1	2.1	ND
August-02	ND	ND	ND
September-02	ND	ND	ND
October-02	ND	ND	ND
November-02	ND	ND	ND
December-02	0.6	0.6	0.7
January-03	2.9	0.5	ND
February-03	ND	ND	ND
March-03	0.6	ND	ND
April-03	0.8	0.8	ND
May-03	0.5	ND	ND
June-03	1.6	ND	1.4
July-03	0.5	ND	ND
August-03	ND	ND	0.6
September-03	ND	ND	ND
October-03	0.9	ND	ND
November-03	0.5	ND	0.5
December-03	ND	ND	ND
January-04	ND	ND	ND
February-04	0.5	ND	ND
March-04	ND	ND	ND

Raw water = untreated water
Effluent=treated drinking water
ND=Non-Detect
Detection limit 1991 to 1999 was 1 ug/L
Detection limit since 2000 is 0.5 ug/L

Documents to accompany letter from Washington Aqueduct to Committee on Government Reform in response to Chairman Davis' March 23, 2004 document request.

1. Corrosion Control Study, June 1994, ECG Incorporated
2. Draft Chloramine Conversion Program, AH Environmental, August 1999
3. Chloramine Conversion Program – AH Environmental, December 1999
4. Letter from Washington Aqueduct to General Manager, DC WASA, September 17, 1999, re: Chloramine Conversion
5. Letter from Washington Aqueduct to General Manager, DC WASA, November 1, 1999, re: Chloramine Conversion
6. News Release, October 10, 2000, "Washington Aqueduct to hold media briefing on water treatment change process"
7. ASTM Report on effects of chloramine on rubber provided by O'Brien & Gere Engineers, Inc., February 25, 2000
8. Ozone Feasibility Study – Final Report – Executive Summary, October 1998, Metcalf & Eddy, Inc.
9. Letter from EPA, Region III to Washington Aqueduct, July 16, 1997, re: optimal Corrosion Control Treatment
10. Letter and report from Malcolm Prinie, Inc to Washington Aqueduct, May 7, 1998, re: Corrosion Inhibitor Study
11. Letter from EPA, Region III to Washington Aqueduct, February 29, 2000, re: Optimal Corrosion Control Treatment
12. Letter from Washington Aqueduct to EPA Region III, May 3, 2000, re: Optimal Corrosion Control Treatment
13. Letter from EPA Region III to Washington Aqueduct, May 17, 2002, re: Optimal Corrosion Control Treatment
14. Letter from DC Department of Health Letter to Washington Aqueduct, May 13, 1998, re: Chloramine conversion
15. Workshop announcement, East Bay Municipal Utility District, May 5, 1997, re: Chloramine Conversion

DEPARTMENT OF THE ARMY
WASHINGTON AQUEDUCT
U.S. ARMY CORPS OF ENGINEERS, BALTIMORE DISTRICT
5900 MACARTHUR BOULEVARD, N. W.
WASHINGTON, D.C. 20016-2514

April 19, 2004

Office of the General Manager

Honorable Tom Davis, Chairman
Committee on Government Reform
House of Representatives
2157 Rayburn House Office Building
Washington, DC 20515-6143

Hand delivered via courier

Dear Mr. Davis:

This responds to your March 23, 2004 letter in which you asked a series of questions for the record of the March 5, 2004 hearing by the Committee on Government Reform entitled, "Public Confidence, Down the Drain: The Federal Role in Ensuring Safe Drinking Water in the District of Columbia."

Washington Aqueduct has addressed each of the seven questions and included its responses as an attachment to this letter. An identical letter with the attachment has been sent to Mr. Waxman, Ms. Norton, and Mr. Van Hollen.

If you have any additional questions or require any clarification of the responses, I may be reached at 202-764-0031.

Sincerely,

Thomas P. Jacobus
General Manager

Attachment

Washington Aqueduct Responses to
Questions for the Record pertaining to March 5, 2004 Hearing

1. It has been widely speculated that chloramines used to kill bacteria may be more corrosive to lead pipes. What steps have been taken to further investigate that theory? Prior to changing the treatment process to chloramines did the Washington Aqueduct conduct a literature review or any direct research into the potential relationship between chloramines and corrosivity? If not, why not?

Research and literature reviews were conducted by Washington Aqueduct and its contractors prior to changing the treatment process. In order to initially address the proposed theory, Washington Aqueduct directed its consultant, the firm of CH2M Hill, to gather information from similar utilities to determine if others have experienced a cause/effect relationship between chloramines conversion and increased corrosion. That effort, which resulted in a collection of anecdotal information from approximately 12 utilities, did not show a relationship. Data showing lower lead levels in the Arlington County and Falls Church distribution systems may indicate that factors other than (or along with) chloramines may be important. One important consideration is that there are few if any lead service lines in the Washington Aqueduct's Virginia service area. There is lead solder and there are of course fixtures to be concerned with. Washington Aqueduct intends to conduct a detailed study to investigate the cause of the problem using consultants and equipment that will be acquired to evaluate the effectiveness of the corrosion inhibitor that it expects will solve this problem. Chloramines will continue to be used as a secondary disinfectant, and Washington Aqueduct is confident that they will work well in conjunction with the inhibitor.

Prior to changing the treatment process, Washington Aqueduct conducted extensive research to identify and address known issues related to the use of chloramines as a secondary disinfectant. This included hiring three national engineering firms to support the chloramines design and conversion, attending workshops on chloramines use, visiting utilities that had recently converted, and reading available literature. It resulted in Washington Aqueduct taking positive measures to protect the distribution system against the phenomenon called "nitrification," which can increase the corrosiveness of water when chloramines are added.

Literature review indicated that nitrification was a concern with chloramines. Nitrification would result in a drop in pH, which could have an effect on corrosion. Washington Aqueduct, in conjunction with the District of Columbia Water and Sewer Authority (DC WASA) has, since implementation of chloramines disinfection, been regularly monitoring the District's distribution system for signs of nitrification, including but not limited to, analyzing samples for nitrite, nitrate, ammonia, pH, disinfectant residuals and heterotrophic plate count (HPC) bacteria according to a chloramines monitoring plan. Samples are collected from routine total coliform monitoring sites, which were selected to be representative of the entire distribution system. Since conversion to chloramine there has been no indication of system-wide nitrification In the last few weeks, in preparing for the use of a corrosion inhibitor, DC WASA is reporting some evidence of nitrification in the 4th high pressure zone from sites that are in areas of low flow velocity and near system ends. This will be evaluated as the flushing program proceeds and the

use of the inhibitor commences. However, at the time Washington Aqueduct made the decision to change its secondary disinfectant to chloramine, it had no knowledge of the hypothesis that chloramines could increase corrosiveness of water in the absence of nitrification.

2. Was anyone at Washington Aqueduct notified of or provided the 2000-2001 lead monitoring results showing four samples over 15 ppb, of which two were over 100 ppb? If so, who received the notification or results and when? Were they viewed as an indicator of a potential increased corrositivity of the water?

The Washington Aqueduct water quality laboratory analyzed the samples for the 2000 – 2001 monitoring period in the capacity of a contract laboratory for DC WASA. The laboratory chief immediately notified DC WASA's Water Quality manager of all samples with lead results greater than 15 ppb. DC WASA has historically had some sample sites with lead results greater than 15 ppb, so having four samples over 15 ppb would not trigger concern about increased corrositivity. The data obtained from the limited number of samples was not enough to be viewed as an indicator of a potential increase in the corrositivity of the water as data differences could be related to seasonal temperatures, changes in sampling locations and sampling error.

Washington Aqueduct did not receive a copy of DC WASA's Lead and Copper Compliance Monitoring Report for 2001 that they submitted to EPA.

3. Was anyone at Washington Aqueduct informed of the exceedance of the Lead Action level in 2002? Who received such information and was this considered to be an indicator of a potential increased corrositivity of the water? What specific actions, if any, did Washington Aqueduct take upon receiving this information?

The Washington Aqueduct water quality laboratory analyzed samples for the 2002 monitoring period. Washington Aqueduct immediately notified DC WASA's water quality manager of all samples with lead results greater than 15 ppb. Washington Aqueduct did notice that more samples were above the lead action level than in previous years. There were no increases in copper results compared to previous years so increased corrositivity of the water was not immediately inferred.

Washington Aqueduct did not know if the lead increase was due to a change in sampling protocol, change in sampling locations, sampling error or due to other factors. Washington Aqueduct did not receive a copy of the Lead and Copper Compliance Monitoring Report for 2002 that WASA submitted to EPA.

In September of 2002, Washington Aqueduct contacted Fairfax County Water Authority and Washington Suburban Sanitary Commission, the other major water utilities adjacent to Washington Aqueduct's service area that also use the Potomac River as their source water to see if they experienced any changes in their lead 90th percentiles for 2002 compared to previous years. This was done to determine if a change in raw water quality could have been a factor. In

addition, 2002 samples for the water quality parameters of alkalinity, conductivity, pH, temperature and calcium, which were collected at routine total coliform rule sampling sites, were evaluated and compared to data from previous years. There were no significant differences. In late 2002, two Washington Aqueduct employees attended a sales presentation on polyphosphates that was arranged by the DC WASA water quality manager. DC WASA water quality staff, engineers, and EPA also attended.

The deputy general manager of DC WASA and the general manager of the Washington Aqueduct did speak on the telephone in mid-2002 concerning the DC WASA's concern that there might be an exceedance of the action level. That discussion was primarily focused on laboratory results and did not address possible changes in the effectiveness of the optimum corrosion control treatment. It was not until August 2003 when EPA's consultant prepared a draft report of his investigation of the possible reasons for the exceedance of the action level that there was any speculation about a direct connection between chloramines and increased corrosiveness. Since that time Washington Aqueduct has continued to work with EPA and its customers to evaluate the situation. In the last several weeks, the efforts have focused on the best way to revise the corrosion control treatment.

4. *EPA commissioned research on corrositivity issues in the District's water in May 2003. What was Washington Aqueduct doing at that time to address that issue?*

In June, 2003, The Washington Aqueduct laboratory was contacted by Ms. Anne Speisman of the engineering consulting firm of Camp, Dresser, and McKee and Professor Marc Edwards, who was a consultant working for a company called CADMUS. CADMUS was under contract to EPA Region 3. In support of the EPA work, the Washington Aqueduct laboratory compiled in-house and DC WASA water quality data and provided it to the consultants. Washington Aqueduct staff worked with the consultants to answer questions and provide data on treatment processes and distribution system monitoring. Additionally staff attended several meetings held by the consultants in July 2003 and November 2003 to discuss their progress on the corrosion investigation, data requirements and theories on the cause of the increased lead levels. As of December 2003, the consultants listed multiple possible causes for the increased lead results, but a single cause could not be identified by any of the consultants. They all recommended additional testing to be conducted to determine the cause.

5. When was anyone at Washington Aqueduct first informed of any of the sampling results from WASA's test of lead service lines in the summer of 2003? Who received such information and were the results determined to indicate increased corrositivity of the water? What specific actions did Washington Aqueduct take in response to this information?

The Washington Aqueduct laboratory analyzed approximately 1,600 water samples for lead as part of DC WASA's lead service line replacement samples from April to August 2003. Because the number of samples DC WASA planned to take (i.e., several thousand) exceeded the capability of the Washington Aqueduct laboratory to process on the turn-around schedule required, DC WASA had to contract with other laboratories in addition to Washington Aqueduct.

Approximately one third of the samples analyzed in the Washington Aqueduct laboratory had results greater than 15.0 ppb. The majority of the results above 15 ppb were below 25 ppb with six percent of the samples greater than 50 ppb. These results were reported by the Washington Aqueduct laboratory manager to DC WASA's water quality manager. Washington Aqueduct did not receive information on the results of the other samples analyzed by other laboratories on behalf of DC WASA. It is Washington Aqueduct's understanding that DC WASA was using the results of all the laboratories to make decisions on how to comply with the Lead and Copper Rule's service line replacement requirements. Washington Aqueduct did not receive the full data set from DC WASA so it was not in a position to come to any independent conclusion on increased corrosiveness. But, as described in the response to the previous question, Washington Aqueduct was already working with EPA Region 3's contractor on corrosion analysis, which had been triggered by the excedences of the action level in 2002. Since this corrosion analysis project was ongoing and would be expected to result in the appropriate actions to reduce corrosiveness, no additional actions were taken.

6. It appears that chlorine, chloramines and phosphate addition all potentially have significant drawbacks. At the March 5, 2004, hearing in the House Committee on Government Reform, one witness, Eric Olson with Natural Resources Defense Council, urged Washington Aqueduct to upgrade to modern water treatment methods such as granular activated carbon and UV disinfection or ozone. Is Washington Aqueduct evaluating the benefits and costs of upgrading its water treatment plants in the District? Please describe the scope and method for any such evaluation. If not, why is Washington Aqueduct not considering this option?

Washington Aqueduct, as directed by its wholesale customers board, has focused on ensuring that treatment processes are currently in place to safely meet the requirements of EPA's drinking water regulations. This includes studies of treatment processes that are not required by current regulations, but may be required by future regulations. Washington Aqueduct also closely monitors EPA's regulatory process to ensure that any required process changes are implemented in advance of regulatory deadlines.

Dual-media filters and chloramines for secondary disinfection are accepted water treatment methods and are widely used throughout the United States and the world. Phosphate-based corrosion inhibitors are also widely used with good success. These are "modern water treatment methods" even though they are fundamentally simple mechanically and chemically. Washington Aqueduct has evaluated granular activated carbon and ozone in two studies done in 1998. The physical upgrade of 26 of the 36 filters at the Dalecarlia water treatment plant that was completed in 2002 does include provision for granular activated carbon filter caps should future regulations require this step. Based on studies done by Metcalf & Eddy, Inc., water industry experience, and Washington Aqueduct's ability to achieve regulatory compliance without using ozone, it has not proceeded with that form of treatment. UV treatment appears more promising with fewer negative side effects compared to ozone, and Washington Aqueduct's engineers and planners have been attending workshops and paper presentations on UV in the last few years. Washington Aqueduct also participated with the American Water Works Association Research Foundation's project on UV Disinfection of Filtered Water Supplies in August 2001. Washington Aqueduct will continue to evaluate this treatment technique and discuss the

advantages and resource requirements with its Wholesale Customer Board and the Board's technical committees in the course of our operations

7. What steps is Washington Aqueduct taking to reassess and manage the combination of treatment methods needed to reduce corrosivity of the water treatment supply and maintain required protection against harmful contaminants found in drinking water?

Washington Aqueduct has worked with EPA to develop an action plan that was publicly posted on EPA's web site on March 10, 2004. Subsequent to that, Washington Aqueduct and its consultant, CH2M Hill, have produced a report for the Technical Expert Working Group that has been assembled to adopt a treatment change. That report specifically addresses corrosiveness while maintaining all other conditions of water quality as required by the Safe Drinking Water Act.

March 23, 2004

Mr. Glenn S. Gerstell
Chairman
District of Columbia Water and Sewer Authority
5000 Overlook Avenue, SW
Washington, DC 20032

Dear Mr. Gerstell:

On March 5, 2004, the Committee on Government Reform held a hearing entitled "Public Confidence, Down the Drain: The Federal Role in Ensuring Safe Drinking Water in the District of Columbia." We received testimony from you on behalf of the District of Columbia Water and Sewer Authority at that hearing

As a result of the hearing, the Committee has a number of questions for the hearing record concerning WASA's role in exercising its responsibilities to prevent lead contamination in tap water in the District of Columbia drinking water supply. Those questions are as follows:

1. On March 10, 2004, EPA announced that WASA would implement an interim action plan to ensure safe drinking water in the District of Columbia. You were directed to provide a plan of action for completion of the items in the March 4, 2004 EPA letter. Please provide a copy of that plan of action. Is one of those actions to test all lead service line locations during 2004, as EPA requested? If not, why not?

2. You stated that WASA is conducting research in collaboration with EPA, the Washington Aqueduct and the D.C. Department of Health to determine the cause of the spike in lead levels and that a report would be prepared sometime in March. Please provide a copy of that report.

At the hearing, WASA officials stated that they believed the public notifications provided in 2002 were appropriate given the small number of samples taken. Roughly 50 percent of the samples were over the action level, the 90th percentile level was 75 ppb (five times the action level), and two samples were over 150 ppb.

3. Did this data indicate a serious problem with high lead levels? If not, please explain the basis for WASA's interpretation of this data.

4. If WASA believed that the sample size was too small to draw any conclusion about the potential seriousness of the problem, why didn't WASA immediately collect additional samples?

Invalidation of samples taken by WASA in the 2001-2002 monitoring period was a subject at the hearing and of recent press reports. Mr. Michael Marcotte, Chief Engineer and Deputy General Manager, WASA, stated that initially seven samples had lead levels above 15 ppb, but that WASA invalidated several of those samples in consultation with EPA Region III. Mr. Welsh stated that EPA never received a request to invalidate samples, and did not invalidate any samples.

5. Did anyone at WASA receive authorization from EPA to invalidate any test results, either in 2001 or any other time? If so, who at WASA received such authorization and who at EPA authorized the invalidation? Did anyone at WASA inform EPA in any manner of WASA's intent or desire to invalidate some samples? Please provide any records relating to communications between WASA and EPA or within WASA on this point.

6. Did anyone at WASA invalidate any test results, either in 2001 or any other time, without receiving authorization from EPA? If so, who at WASA invalidated the results?

At the hearing, questions were raised regarding the timeliness and adequacy of WASA's response to various issues related to the lead problem.

7. On what date did WASA begin testing in lieu of replacement of lead service lines pursuant to 40 CFR 141.84(c)? When did WASA receive the first results from that testing? When did WASA first notify individual residents of the results of these tests of their tap water? When did WASA first notify EPA of any of the results of these tests, whether through formal or informal communications?

8. Prior to January 31, 2004, in notifying individual residents of their tap water test results, did WASA provide any information on the health risks of lead, particularly to pregnant women, infants, and young children? If not, why not? Does WASA maintain that these notifications were appropriate?

9. At any point, did WASA request the Army Corps of Engineers to reevaluate the adequacy of its corrosion control plan? Please describe in detail the dates and substance of communications between WASA and the Corps on this issue.

10. How confident are you in the accuracy of its materials survey indicating the number and location of lead service lines? Based on WASA's experience in replacing lead service lines to date (or any other means of evaluating the survey), what is the material survey's accuracy rate for predicting where lead service lines are located? Could the material survey be updated or improved? If so, does WASA plan to update the materials survey? What is the timeline for any such effort?

11. What evidence does WASA have that residents in multi-family dwellings have low lead levels? Please provide any test results you have from such dwellings.

12. WASA continues to be harshly criticized for withholding information on test results. What steps does WASA take to vet the data from individual test results prior to releasing those results?

13. Will WASA commit to inform customers of their individual tap water testing results within two weeks of the date that WASA receives such results? If WASA believes it cannot meet this timeframe, please explain the problem and provide an alternative timeframe that WASA commits to meet.

14. Will WASA commit to inform the public of new test results within the same timeframe as individual customers are informed? Will WASA commit to using a readily accessible means of providing this information to the public, such as posting a frequently updated database and/or map of test results on its website? If not, why not?

Test results in the District indicate that partial lead service line replacement may raise rather than lower lead levels at the tap. If further monitoring confirms that this is a long term effect, clearly replacing portions of lead service lines would further endanger public health, as well waste money.

15. If it is confirmed that partial lead service line replacement raises lead levels, how will WASA address this problem? Will WASA pay for full service line replacement?

Please provide answers to these questions by April 9, 2004.

Sincerely,

Tom Davis
Chairman

Henry A. Waxman
Ranking Member

Eleanor Holmes Norton
Member of Congress

Chris Van Hollen
Member of Congress

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
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OFFICE OF THE GENERAL MANAGER
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April 26, 2004

The Honorable Tom Davis, Chairman
Committee on Government Reform
2157 Rayburn House Office Building
Washington, D.C. 20515

Re: Committee Questions Regarding the Federal Role in Ensuring Safe Drinking Water in the District of Columbia

Dear Mr. Chairman:

As a result of the Committee hearing on the federal role in ensuring safe drinking water in the District of Columbia, the Committee submitted a number of questions and requested a response from the District of Columbia Water and Sewer Authority ("WASA") for the hearing record.

On behalf of WASA, I would like to submit the enclosed responses to the Committee's questions. I have also enclosed a set of documents that I believe are responsive to the Committee's inquiries.

Please contact the Assistant to the General Manager for Government Relations, Johnnie R. Hemphill, Jr., or me at 202-787-2609 if we can provide any further assistance.

Sincerely,

Jerry N. Johnson
General Manager

c: Glenn S. Gerstell, Chairman
DC WASA Board of Directors

Enclosures

1. **On March 10, 2004, EPA announced that WASA would implement an interim action plan to ensure safe drinking water in the District of Columbia. You were directed to provide a plan of action for completion of the items in the March 4, 2004 EPA letter. Please provide a copy of that plan of action. Is one of those actions to test all lead service line locations during 2004, as EPA requested? If not, why not?**

   The Authority is very strongly committed to work with households that have been identified as having a lead service line to seek the resident's participation in the testing program this year. As you now, the Authority conducted a very extensive effort in 2003.

   Last year, for example, customers were initially contacted by mail. After an initial low response, customers were offered a $25 incentive to participate. From April 2003 through September 30, 2003, about 3200 customers were contacted by telephone. Approximately 11,000 sampling kits were sent to customers by Federal Express through September 2003.

Lead Services Sampling Program 2003 - Direct WASA Customer Contacts -	
Sample Letters/No Incentive	8,000
Sample Letter/Incentive ($25-$50)	6,000
Phone Solicitation	3,200 (partial overlap w/ letters)
Sample Kits Shipped by Fed Ex	11,000
Approx. Total Contacted	14,800
Total Samples	6,131

   We are making every effort to seek and obtain customer involvement in this voluntary program, and we are committed to a very robust effort for the current year. The Authority continues to collaborate with the EPA on obligations under the Lead and Copper Rule, just as it has since the exceedance of the action level. A copy of the interim action plan submitted to the EPA is enclosed. The Authority is continuing its free testing program, and is contacting each of the households by mail that is believed to have a lead service line. For such households that have not already been tested, the letters include a post card that each household is encouraged to use to request a test kit. Residences for which there is no record of a service line pipe material are also being contacted and encouraged to participate in the testing program. The test kit and water samples are delivered and picked-up by United Parcel Service, and sample results are mailed to the household.

2. **You stated that WASA is conducting research in collaboration with EPA, the Washington Aqueduct and the D.C. Department of Health to determine the cause of the spike in lead levels and that a report would be prepared sometime in March. Please provide a copy of that report.**

   A draft corrosion control plan developed by the Technical Expert Working Group (comprised of representatives of EPA, the Washington Aqueduct, the Water and Sewer Authority and their consultants) has been circulated by the Environmental Protection Agency for peer review. There is a proposed schedule for phasing in changes in water treatment (the responsibility of the Washington Aqueduct) that will be shared with the public at meetings hosted by the Environmental Protection Agency. The proposed schedule anticipates the implementation of a pilot application of zinc orthophosphate to inhibit corrosion in a portion of the distribution system in June. A successful pilot test of this program would be followed by application of zinc orthophosphate throughout the distribution system in the fall or perhaps earlier.

3. **Did this data indicate a serious problem with high lead levels? If not, please explain the basis for WASA's interpretation of this data.**

   In general, it is important to understand that the sample data that indicated that the action level had been exceeded was collected and reported after many years when the action level had not been exceeded. When the action level was exceeded, the Water and Sewer Authority took prompt action as proscribed by the Lead and Copper Rule.

   Like other municipal water systems, the Water and Sewer Authority has limited capacity to evaluate the health effects of lead concentrations in water beyond the information provided by the regulation and associated guidance. Neither the Environmental Protection Agency, nor the local Health Department upon which we depend for such guidance reacted with a heightened level of concern when informed of the sample results.

   Further, with respect to the exceedance, the data from the compliance samples specifically indicated that the "action level" -- a regulatory trigger that informs water authorities across the nation that optimum corrosion control is not being achieved -- had been exceeded. The data was provided in a timely manner to the Environmental Protection Agency as required under the Lead and Copper Rule. In fact, the information was provided informally three months prior to the end of the compliance reporting period. The DC Department of Health was also notified. The

material provisions of the regulation, and the response of the EPA and public health authorities did not indicate that there had been a misinterpretation of the data on the part of the Water and Sewer Authority. Again, specifically, the exceedance of the action level indicated that the Water and Sewer Authority should begin:

- Working with the EPA and the Washington Aqueduct to achieve optimum corrosion control;
- A program of public education about the hazards of environmental lead exposure from water and other sources;
- A program to replace (or test to clear) seven percent of the lead service line pipes in public space yearly until the action level was no longer exceeded.

4. **If WASA believed that the sample size was too small to draw any conclusions about the potential seriousness of the problem, why didn't WASA immediately collect additional samples?**

   After WASA's initial report of the exceedance of the action level to the EPA, the number of WASA's regulatory compliance samples under the Lead and Copper Rule was increased by the EPA from 25 samples biannually to 100 samples biannually (moving from 50 to 200 samples annually). WASA's conclusion from initial sampling results when the action level was exceeded was that the optimum corrosion control plan that had been adopted and implemented by the Washington Aqueduct (regardless of the cause of the higher lead concentrations) was no longer sufficiently effective in maximizing corrosion control in some portions of the distribution system, specifically, at some properties served by a lead service line pipe. However, one of the immediate consequences of exceeding the action level was to move to a larger compliance sampling program. By design, and through the EPA administration of the regulatory regime, the Water and Sewer Authority was immediately required to quadruple the number of households that must participate in the compliance sampling program under the Lead and Copper Rule.

5. **Did anyone at WASA receive authorization from EPA to invalidate any test results, either in 2001 or any other time? If so, who at WASA received such authorization and who at EPA authorized the invalidation? Did anyone at WASA inform EPA in any manner of WASA's intent or desire to invalidate some samples? Please provide any records relating to communications between WASA and EPA or within WASA on this point.**

   Ms. Seema Bhat was the incumbent Water Quality Manager during compliance year 2001-2002. As you know, WASA is in litigation with Ms.

Bhat, whose employment was terminated for reasons of performance, and the litigation is continuing. WASA is conducting a document search/review to determine whether there are any records that are relevant to this issue, including working with the laboratory that provided the analysis of the compliance samples in order to try to more fully understand the process that may have been used.

The Water Quality Manager, a senior management position within the WASA Department of Water Services, is responsible for the compliance program under the Lead and Copper Rule. In summary, our current understanding is as follows.

In sworn testimony in a Department of Labor Administrative Law proceeding, Ms. Bhat responded to the following related question: "At some point, did you realize that WASA was not going to exceed the action level for 2000-2001?" as follows:

> "After investigating the high lead level results that were obtained – the seven high results that were obtained, and after consulting with EPA, we did obtain the samples – same sites that – because of the unavailability of the customer, and hence we had taken other sites in case we – however, when we tallied all the samples that were given to Mr. Rizzo, the 50 samples and we came up with the 50 sites, some of the sites that we have these samples did not correspond to the 50 that the volunteers that we had given to Mr. Rizzo, and all the volunteers just calculating based on all the volunteers that were given to Mr. Rizzo, we were able to calculate the 90th percentile and we were – WASA was in compliance. So some of the samples are extra samples because we had taken it as a precaution just in case we were not able to get the original samples."

In this sworn statement, Ms. Bhat directly states that she consulted with EPA on this issue. Her statement seems to suggest there may have been some question regarding the availability of the volunteer homeowner(s) to participate in the sampling. Ms. Bhat seems to state that her treatment of the samples was based on a decision she made in consultation with EPA regarding the appropriate use of additional samples that were available and needed because she believed there was a problem (perhaps "availability") with one or more of the households or samples in the base number of participating compliance households.

6. **Did anyone at WASA invalidate any test results, either in 2001 or any other time, without receiving authorization from EPA? If so, who at WASA invalidated the results?**

Please see the response to Question (5). In addition, Ms. Bhat in a July 30, 2002, e-mail to Mr. George Rizzo, the subject of which was: "Lead and Copper monitoring for the period July 2001 to June 2002", suggests very openly to EPA that it was her practice to evaluate a sample or result in some manner:

> "Per your request on March 3, 2002 I had send you the partial results of the lead and copper monitoring for the period July 2001 to June 2002. This was to give you a heads up on the lead and copper monitoring status. Although the monitoring was not complete at the time I had indicated to you that there were a number of high lead results and it did not appear that WASA would meet the Lead action level for the subject monitoring period.
>
> I received the electronic copy of the lead and copper analysis performed in June 2002. This completes the July 2001 to June 2002 monitoring. I have yet to closely review the data to see if any of the samples/results are invalid. However, this does not appear to be the case. On initial evaluation I regret to note that WASA did not meet the Lead Action level both for the first and second draw. I have not yet received the official results from Washington Aqueduct. Elizabeth indicated that I may receive them next week. After I receive them I will send the data and the 90th percentile computation officially.
>
> I needed some feedback from you on the follow-up action. As I interpret the rule WASA has to go back on increased monitoring. However, I need to confirm from you whether the increase is both the frequency of monitoring as well as the number of samples. Does this apply from July 2002 – June 2003. Also has WASA to implement any public education program is there a time limit within which to implement it etc. Is there any notification other than in the CCS next year
>
> I will appreciate your assistance
>
> Thanks."

7. **On what date did WASA begin testing in lieu of replacement of lead service lines pursuant to 40 CFR 141.84(c)? When did WASA receive the first results from that testing? When did WASA notify individual residents of the results of these tests of their tap water? When did WASA first notify EPA of any of the results of these tests, whether through formal or informal communications?**

   The first sample collected was on March 4, 2003. Sampling continued through October 2003. WASA's policy has been to make every effort to forward test results to participating households within 30 days of receipt by the laboratory, but this self-imposed timeframe was not always achieved. For example, questions from customers during this period prompted changes to the notice letters in order to try to address certain concerns and inquiries made by customers as they were raised during subsequent customer contacts. EPA was informally notified of the plan to undertake extensive sampling. EPA was provided formal notice of the addresses that were included in the required 1615 services that were considered replaced under the Lead and Copper Rule in the report for the compliance period (October 10, 2003 deadline).

8. **Prior to January 31, 2004, in notifying individual residents of their tap water test results, did WASA provide any information on the health risks of lead, particularly to pregnant women, infants and young children? If not, why not? Does WASA maintain that these notifications were appropriate?**

   Yes, WASA did provide to the general public and to customers information about the health risks of environmental lead exposure. WASA does not possess, and at no point was it encouraged by the EPA or the District of Columbia Department of Health to obtain independent advice on health risk communications to its customers. Rather, WASA has reasonably relied upon and was guided by the regulation and the advice and concurrence of the regulator in WASA communications programs, as well as the expertise and judgement of the local health department.

   The public information that was distributed to every household and to customers, including *Living Lead Free in DC*, *The Drinking Water Quality Report*, *An Information Guide on Lead in Drinking Water*, a customer newsletter, and a bill notice, addressed this issue. Some of the material was available in both English and Spanish. Copies of brochures were made available to the Department of Health for its outreach program, and some of the information was made available to libraries and to clinics. Information about at risk groups was also included, *e.g.* greater risk for certain populations, preparing infant formula with cold water, water testing, and tap water flushing.

The initial sample result letters sent to customers gave instructions to flush before using water for consumption, and included an enclosure with health information excerpted from the EPA "Notification and Reporting Requirements" brochure. In addition, and as noted above, the "Living Lead Free" brochure was sent to every household at the end of October, 2003, and included information on the health effects of lead and those at greatest risk.

There is no provision in the EPA regulations instructing a utility to communicate to individual customers that have participated in the sampling program by letter, or proscribing the language to be used in such a communication. Those requirements are pertinent only to general public notifications, *e.g.* bills, brochures, public service announcements.

9. **At any point, did WASA request the Army Corps of Engineers to reevaluate the adequacy of its corrosion control Plan? Please describe in detail the dates and the substance of communications between WASA and the Corps on this issue.**

In the fall of 2002, following the trigger of the action level, there were discussions with EPA and the Aqueduct regarding a study of the optimal corrosion control methodology and why it was no longer being achieved. WASA and EPA sought the involvement of external expertise. Dr. Mark Edwards, Virginia Polytechnic and State University, was hired by the EPA. WASA retained CDM, a consulting, engineering construction firm, to support WASA's involvement in the project and to help evaluate the findings produced by other parties. The lead profiles that have been used to reevaluate the EPA flushing recommendations as they relate to the District of Columbia, are an example of a product of this work

Historically, and for your information, as a result of the Lead and Copper Rule in 1991, the Washington Aqueduct began a corrosion control study. When the action level was exceeded in 1992, the Aqueduct was required to develop a corrosion control plan. The final report was completed in June 1994. The recommendation was to maintain a positive Langeliers Saturation Index through adjustment of pH. EPA approved the corrosion plan in 2000, and gave formal notice of its approval in April 2002.

During this time, it was also necessary to lower trihalomethanes in compliance with more stringent national standards established by EPA. Chronic exposure to high concentrations of trihalomethanes is considered to be potentially carcinogenic. The Aqueduct evaluated its treatment process. It notified its wholesale customers that each system would probably violate the new limits if the Aqueduct continued to treat water

using free chlorine, and also recommended using chloramines. WASA's public information officer and Water Quality Manager worked with the Aqueduct to provide appropriate public notification of the change and the distribution-wide system flushing. Conversion began on November 1, 2000.

10. How confident are you in the accuracy of the materials survey indicating the number and location of lead service lines? Based on WASA's experience in replacing lead service lines to date (or any other means of evaluating the survey), what is the material survey's accuracy rate for predicting where lead service lines are located? Could the material survey be updated or improved? If so, does WASA plan to update the materials survey? What is the timeline for such an effort?

Based on excavations of test pits and physical replacements that allowed actual observation of service lines in 2003, the initial inventory (based principally on the Weston Report) of likely lead service lines is accurate approximately 80 percent of the time (generally, of 100 service lines identified as lead, 80 of the service lines are actually made of lead.) WASA does have other sources of information that provide some data on pipe material. The WASA customer information system includes a record of pipe material on most but not all of the customer accounts. This information, again based upon actual physical observation following an excavation, is accurate about 60 percent of the time. WASA is using a combination of this data, along with information produced by working with customers who participate in the water sample testing program, in its decision-making.

A WASA consultant is currently working to develop a technology that may allow WASA to more accurately identify/confirm service line pipe material without an excavation. This technology is being field tested over the next 6-12 months. WASA is also investigating other approaches to help identify service line pipe material more efficiently.

11. What evidence does WASA have that residents in multi-family dwellings have low lead levels? Please provide any test results you have from such dwellings?

WASA will replace as a high priority service lines for multi-family units that are known to be lead. However, WASA's best information is that larger multi-family properties are served by lines that exceed two inches in diameter. Lead was not an optimal material for these larger service lines and was not commonly used for such purposes. The principal concern for

larger properties (those bigger than a single-family sized dwelling) are the internal plumbing components (lead solder in the plumbing or brass fixtures). WASA discourages individual tenants from seeking to participate in the sampling program *en masse*, but encourages owners or managers of multi-family units to contact WASA. When investigation of the records (CIS data and as-built plans) indicated that the line was lead or was unknown, a test kit is sent. WASA will compile and analyze this data.

WASA has proposed a test plan to EPA that will test these assumptions. Once approved, WASA will implement the test plan.

12. WASA continues to be harshly criticized for withholding information on test results. What steps does WASA take to vet the data from individual test results prior to releasing those results?

WASA recently terminated a contract with a firm that had been responsible for managing the water sample test program in order to ensure that the program is optimally efficient and responsive. The objective is to provide test results within 30 days of receipt of the sample by the lab, if possible. The process, however, requires that the lab not only manage the sample and its analysis, it must also manage test kit shipment to and from the homeowner. Assuring a proper and reliable chain of custody and accurate test result management (transfer to WASA and the homeowner) for thousands of samples is critically important, and we have found that labs have limited capacity and other customers.

Water sample test results have been, and will continue to be, provided only to the individual customers for whom the tests were conducted. No information regarding the test results is withheld from the customer. Routinely, sample results are provided in correspondence to the customer once the results are known. However, in order to ensure that information is as accurate as possible, a change in the language of the correspondence or related enclosures (fact sheets, agreements offering the opportunity to use a WASA contractor to replace the private service line or other forms, translations) may result in a delay.

13. Will WASA commit to inform customers of their individual tap water testing results within two weeks of the date that WASA receives such results? If WASA believes it cannot meet this timeframe, please explain the problem and provide an alternative timeframe that WASA commits to meet.

In 2003, WASA's policy was to provide sample test results within 30 days of a customer's return of the sample test kit. WASA processed just over 6,000 such test kits and results in 2003. Since February 4, 2004, WASA

has shipped 21,954 test kits. WASA is very pleased to maintain its commitment to forward test results within 30 days of receiving a sample test kit from a customer for laboratory processing.

14. Will WASA commit to inform the public of new test results within the same time frame as individual customers are informed? Will WASA commit to using a readily accessible means of providing this information to the public, such as posting a frequently updated database and/or map of test results on its website? If not, why not?

WASA provides a report on the sample testing results that are made available to the public at a press briefing conducted by Mayor Anthony William's on a weekly basis. The report provides aggregated data across a range of lead concentration levels, *e.g.* "<15 ppb" and ">150 ppb". This information is also organized by pipe material. The report is available on the WASA website, www.dcwasa.com.

Since February 4, WASA has provided testimony and shared this data at two congressional hearings, six DC Council hearings, and several WASA Board of Directors meetings and media briefings. Since February 4, 2004, WASA conducted eight community meetings across the District of Columbia where this information was discussed. The Washington Aqueduct and the District of Columbia Department of Health have participated in those meetings at WASA's invitation. WASA also participated during this time in 23 community meetings hosted by other organizations. WASA has arranged to provide on-line access to our customer information system at many of these meetings to help customers learn whether they are likely to have a lead service line and to facilitate distribution of filters to eligible households.

15. If it is confirmed that partial lead service line replacement raises lead levels, how will WASA address this problem? Will WASA pay for full service line replacement?

Provisions in the Lead and Copper Rule recognize the possibility that a partial lead service line pipe replacement may result in a temporary spike in lead concentrations that are the result of cutting the lead pipe in order to connect a non-lead pipe to the service line. Under the regulation, WASA is responsible for urging extensive flushing of the service line following a partial replacement, and also for working to obtain follow-up sample test results. The regulation and WASA's experience indicate that a spike in lead levels may occur, and also that these concentrations will usually fall dramatically following extended flushing.

Recently, in conjunction with the DC Department of Health and EPA, WASA determined that it would not cut a lead service line in the process of completing a partial service line replacement, pending additional evaluation of the practice. WASA will replace the service line up to the nearest threaded joint, usually the water meter, unless the owner agrees to undertake the private side replacement simultaneously. Despite this decision to take extra precautions to protect the health of homeowners, EPA has yet to respond to WASA's request to count these partial replacements up to the nearest threaded joint as "replaced" under the Lead and Copper Rule.

WASA is not permitted to use public resources for private purposes, including the replacement of a service line that rests on private property. The WASA Board and management and the District of Columbia are evaluating a number of alternatives that, if approved, may provide a measure of support for private homeowners.

ONE HUNDRED EIGHTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON GOVERNMENT REFORM

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March 23, 2004

The Honorable Michael O. Leavitt
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Administrator Leavitt:

On March 5, 2004, the Committee on Government Reform held a hearing entitled "Public Confidence, Down the Drain: The Federal Role in Ensuring Safe Drinking Water in the District of Columbia." At that hearing, we received testimony from both Benjamin Grumbles, Acting Assistant Administrator for Water at the Environmental Protection Agency, and Donald Welsh, Regional Administrator for EPA's Region III.

As a result of the hearing, the Committee has a number of questions for the hearing record concerning EPA's role in exercising its responsibilities under the Safe Drinking Water Act to prevent lead contamination in tap water in the District of Columbia. Those questions are as follows:

EPA Role in D.C. Lead in Drinking Water Problem

The monitoring officially reported by WASA to EPA for the District for 2000-2001 included four samples above the lead action level, with two of those samples registering above 100 ppb.

1. Did EPA Region III view these results as a matter for concern? If so, what did EPA do in response?

In August 2002, EPA Region III received WASA's monitoring report for lead sampling during 2001-2002. This report showed that out of 52 samples, about half were over the EPA action limit. Three of those samples were over 100 parts per billion, with two samples over 150 parts per billion, or 10 times the EPA action limit. EPA's prepared testimony for the hearing indicates that EPA contracted with Professor Marc Edwards of Virginia Polytechnic Institute and State University to start to study the problem in May 2003, eight months later. In addition, the *Washington Post* reported on March 16, 2004 that an EPA Region III liaison to the District,

Chris Ball, tried to alert the Region III Director of Water Quality, Jonathan Capacasa, in 2002 about the spike in D.C. lead levels.

2. What did EPA do in response to the August 2002 WASA test results between September 2002 and May 2003? Did EPA view these test results with any sense of urgency?

3. How did EPA react to Mr. Ball's warnings? Were any written documents prepared as a result of this situation? If so, please supply a copy of them.

In response to a question posed in a March 1, 2004, letter from Reps. Davis, Waxman and Norton, Mr. Donald Welsh, Regional Administrator, EPA Region III, appeared to justify EPA's very limited actions in response to the August 2002 report with the following statement: "Information indicating more widespread problems with corrosion were not provided to EPA Region III until October 17, 2003. EPA Region III did, however, act to ensure steps were taken to address *the problem as we understood it prior to that date*." (Emphasis added.) But in August 2002, EPA already knew that half of the samples were over the action level and that some samples had extremely high lead levels. Moreover, had WASA not chosen to take an alternative compliance route, EPA never would have obtained the information it received on October 17, 2003.

4. Did the information in the August 2002 monitoring report in any way justify a limited or less urgent response?

5. Did EPA have reason to believe that WASA had an effort underway to determine the cause of this spike in lead levels and that WASA would be successful in solving this problem without EPA intervention?

In the summer of 2003, WASA significantly expanded its testing program as an alternate means of meeting the requirement to replace 7 percent of the lead service lines. By October 27, 2003, EPA received the first set of these results. These results were indisputably bad. Of the 4,613 lines tested through September 30, 2003, 73 percent were over the action level. As stated in the attachment to Mr. Welsh's prepared testimony, "[i]n many cases lead levels were very high, with nearly 3 percent of lines above 300 parts per billion and 18.5 percent above 100 parts per billion."

6. Did these results indicate definitively that the corrosion control program wasn't working?

7. Did EPA request or require immediate action by the Army Corps and WASA to investigate the problem? If so, what action did EPA request or require?

8. What, if anything, did EPA do to ensure that people who live and work in the District understood the scope and severity of the problem?

Invalidation of Test Results

Invalidation of samples taken by WASA in the 2001-2002 monitoring period was a subject at the hearing and of recent press reports. Mr. Michael Marcotte, Chief Engineer and Deputy General Manager, WASA, stated that initially seven samples had lead levels above 15 ppb, but that WASA invalidated several of those samples in consultation with EPA Region III. Mr. Welsh stated that EPA never received a request to invalidate samples, and did not invalidate any samples. Moreover, he stated that legally only EPA could invalidate a sample, and that EPA's review of the laboratory data indicated that no samples had been invalidated.

9. Did EPA give authorization for WASA to invalidate any test results, either in 2001 or any other time? If so, who authorized the invalidation? Was EPA informed in any manner of WASA's intent or desire to invalidate some samples? Please provide any records relating to communications between WASA and EPA or within EPA on this point.

Corrosion Control

Corrosivity of the Washington Aqueduct water supply has received substantial attention as a potential culprit of the spike in lead levels in the District of Columbia water. The focus of this controversy is the Aqueduct's conversion to chloramines in 2000.

10. What oversight of such decisions does EPA exert?

11. What changes in EPA's role are being considered or implemented?

12. How does or should EPA manage the "simultaneous compliance" or synergistic effects of different decisions on a system's water supply?

Oversight of Notification Requirements

EPA received WASA's Lead and Copper Public Education Program Report for 2002 on January 24, 2003, and WASA's Lead and Copper Public Education Program Report for 2003 on October 14, 2003. It is undisputed that WASA's notification efforts detailed in these reports were inadequate to actually put the public on notice of the problem or encourage people to take action to protect themselves and their children. At the hearing, Mr. Welsh indicated that it appeared that WASA may have also failed to comply with the notification requirements spelled out in the regulations.

13. Did EPA Region III staff review each of these reports? In each case, did Region III find that WASA's notification efforts met the requirements of the regulations? Did Region III consider whether WASA's notification in fact was adequate to inform the public, and if so, what was Region III's conclusion? Did Region III have any communications with WASA regarding the adequacy of each of these reports? If so, please indicate the dates, form, and substance of all such communications.

14. Is EPA Region III's oversight of the WASA notification process any different from how states oversee their jurisdictions' notification activities? If not, is EPA concerned that notification efforts may also be inadequate in other jurisdictions? If so, what steps is EPA taking to address this concern?

Partial Lead Service Line Replacement

Test results in the District indicate that partial lead service line replacement may raise rather than lower lead levels at the tap. If further monitoring confirms that this is a long term effect, replacing portions of lead service lines would further endanger public health, as well waste money.

15. If it is confirmed that partial lead service line replacement raises lead levels, how will EPA address this problem? Will EPA require WASA to replace the full lead service lines? Is any federal funding potentially available to help fund full lead service line replacements?

Oversight and Enforcement Resources

EPA's Region III office has primary oversight and enforcement responsibilities for the SDWA in the District of Columbia. EPA must have adequate resources to carry out these responsibilities.

16. What resources does EPA Region III have, in terms of funding levels and personnel (in full-time equivalents or FTEs), for overseeing and enforcing the SDWA? What are the equivalent resource levels for these activities in the other EPA regions?

17. How much of those resources are devoted to SDWA oversight and enforcement for the District of Columbia? Specifically, how many staff are dedicated full-time to drinking water oversight and enforcement for the District of Columbia? How many positions, if any, are dedicated part-time to SDWA enforcement for the District of Columbia?

18. What were the funding levels and FTEs for EPA SDWA enforcement activities in fiscal years 2000-2004?

Emergency Enforcement Powers

At the hearing, EPA indicated its willingness to use its authority to ensure that WASA provides alternative supplies of drinking water to those who need it. On March 4, 2004, Mr. Welsh sent a letter to the City Administrator and Deputy Mayor of the District laying out the "specific interim actions that EPA believes WASA must undertake to respond to the immediate threat."[1] One of these actions is to "[m]ake available as soon as feasible, but within 30 days, an interim alternative supply of drinking water to all users supplied by WASA who are believed to receive their water through known or suspected lead service lines. The goal is to provide an alternate water source or filters to the 23,000 homes with lead service lines." EPA demanded that WASA commit to carry out the listed actions. In a clear reference to EPA's emergency enforcement powers, EPA stated "[i]n the event you are not able to make such a commitment, EPA is prepared to exercise its authorities to address these issues."

At the hearing, Mr. Welsh repeated: "If affected residents are not promptly supplied with safe drinking water, we stand ready to exercise our authorities to compel action."[2] On March 10, 2004, EPA announced that WASA would implement an interim action plan to ensure safe drinking water in the District of Columbia. EPA stated that WASA had agreed, among other actions, to "[w]ithin 30 days, deliver an alternate interim water supply (bottled water or filters) to occupants in all the estimated 23,000 homes and businesses with lead service lines."[3]

WASA outlined its understanding of its commitments in a March 10, 2004, letter to EPA. This letter indicates that WASA had not, in fact, committed to deliver an alternate water supply to all homes and businesses with lead service lines. Rather, WASA committed to, over the next 30 days, procure (not deliver) an unspecified number of additional devices, to "allow distribution" to customers believed to have lead service lines. This suggests that WASA could comply by providing devices only to those who go to inconvenient distribution points and request them. Subsequently, the Mayor ordered WASA to mail filters to households with suspected lead service lines, and WASA developed an action plan for carrying out its commitments. WASA has not yet provided this action plan to the Committee.

19. If EPA determines that the action plan is sufficient, how will EPA monitor and enforce that action plan? If WASA does not agree to, or does not carry out, an action

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[1] Letter from Donald S. Welsh, Regional Administrator, U.S. EPA to Robert C. Bobb, City Administrator and Deputy Mayor, Government of the District of Columbia (Mar. 4, 2004).

[2] BNA, Daily Report for Executives, *EPA to Review 1991 Lead-Copper Rule After Elevated Levels Found in Capital City* (Mar. 8, 2004).

[3] U.S. EPA, *WASA agrees to implement interim plan for lead; Multi-agency corrosion team presents EPA with strategy* (Mar. 10, 2004) (press release).

called for by EPA in a timely manner, will EPA consider issuing an enforceable administrative order?

20. Is EPA considering providing other assistance to the District, such as helping to fund the provision of alternative water sources or expanded testing?

Scope of the Problem

21. Please describe the types of information that states are required to report to EPA under the lead and copper rule, or encouraged to report under any relevant EPA guidance. Please indicate any requirements to report lead levels in drinking water, response actions taken upon an exceedence of the action level, corrosion control activities, and changes to drinking water treatment methods.

22. With respect to the 90th percentile monitoring results, for which years does EPA currently have data? When is or was the deadline for reporting the 2003 data? Please provide a summary of the 90th percentile lead monitoring results nationwide since 2000 by state, to the extent that EPA has that information.

23. For each jurisdiction that exceeded the action level in or after the year 2000, please indicate whether the jurisdiction is still in exceedence and describe the actions that have been taken to notify the public and correct the problem.

24. Which jurisdictions nationwide have lead service lines? Have any of these jurisdictions experienced widespread elevated lead levels?

25. Which jurisdictions use chloramines for disinfection? To EPA's knowledge, have any of these jurisdictions seen an increase in lead levels after switching to chloramines? Is the District the only jurisdiction that has switched to chloromines with elevated levels of which EPA is aware?

26. Have any jurisdictions other than the District engaged in large-scale samplings for lead (*i.e.*, more than the required 50 or 100 samples per year)? Have any jurisdictions other than the District conducted samplings based on second draw rather than first draw samples? If so, please summarize the results of those samplings.

27. Is EPA aware of any studies or evaluations that call into question the adequacy of the current monitoring protocols under the lead rule as a means of detecting lead contamination problems in drinking water? If so, please provide copies of any such studies or evaluations.

28. Does EPA have adequate information at this time to determine whether other jurisdictions besides the District have widespread elevated lead levels?

Research Efforts and Funding

It appears that there are substantial gaps in our scientific understanding of this problem and that more research would be helpful.

29. Please provide the comparable budget requests for drinking water research, annual appropriations, and actual spending on research on corrosion and lead leaching for the years FY2000 through FY2004. What funding levels has the Administration requested for these areas in FY2005, and what level of funding does EPA anticipate may be available for research on corrosion and lead leaching?

Please provide answers to these questions by April 9, 2004.

Sincerely,

Tom Davis
Chairman

Henry A. Waxman
Ranking Member

Eleanor Holmes Norton
Member of Congress

Chris Van Hollen
Member of Congress

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

MAY 5 2004

The Honorable Tom Davis, Chairman
Committee on Government Reform
U.S. House of Representatives
Washington, D.C. 20515-6143

Dear Chairman Davis:

Thank you for your letter to Administrator Michael O. Leavitt dated March 23, 2004, regarding elevated levels of lead in drinking water in many homes served by the District of Columbia's water systems. I can assure you that this matter is of the greatest concern to the U.S. Environmental Protection Agency (EPA) and that we have a number of actions underway to correct the problem. An attachment to this letter provides responses for the specific questions that you raised in your letter to the Administrator.

I would like to bring the Committee up to date on a number of actions specific to Washington, D.C. that are being conducted by my office. We have undertaken a compliance review of the D.C. Water and Sewer Authority's (WASA) activities, particularly as it relates to public education and lead service line replacement requirements. On March 31, 2004, we informed WASA that our review had identified several potential violations, and also transmitted to them an Information Request under Section 1414 of the Safe Drinking Water Act. However, while we are continuing our compliance review, our main priority is ensuring that affected citizens in the District have access to safe drinking water. To this end:

- We have worked with the District and WASA to ensure that all potentially affected residents with lead service lines receive filters.
- WASA is undertaking additional tap water sampling in a representative group of homes and other buildings - including schools and day care centers - that are not served by lead service lines in order to fully identify the extent of the problem.
- We are reviewing WASA's past outreach efforts and will soon make recommendations to ensure that any future outreach and education activities will satisfy our directive that communications on the lead issue convey the proper sense of urgency and concern for public health.
- WASA has committed to an accelerated schedule for physically replacing lead service lines in the District, and has developed a plan to prioritize replacements to highest risk premises, in consultation with the District government, the Department of Health, and EPA.

A Technical Expert Working Group continues to investigate the potential causes of elevated levels and is pursuing a technical solution to the problem. On April 15, the group presented its recommendation for a treatment option to reduce corrosion, and pilot treatment application is scheduled to begin on June 1. EPA has also retained an independent peer review panel to review the efforts of the working group.

With respect to national issues, an April 19, 2004 letter from Acting Assistant Administrator Benjamin Grumbles, responding to the Committee's March 17, 2004 letter, outlined a number of efforts underway by the national office to conduct a review of implementation of and compliance with the Lead and Copper Rule.

Over the coming months I assure you that I will continue to give the remediation of the lead corrosion problem in the District and the protection of the health of the District's citizens my highest attention. EPA wants to ensure that citizens in the District and across the country have confidence in the safety of their drinking water.

I look forward to working with the Committee to respond to any additional concerns that you may have. If you have specific questions please do not hesitate to contact me or your staff may contact Steven Kinberg, Office of Congressional and Intergovernmental Relations, at 202-564-5037.

Sincerely,

Donald S. Welsh

Donald S. Welsh
Regional Administrator

Attachment

EPA Responses to Questions Submitted on March 23, 2004 by the U.S. House of Representatives Committee on Government Reform

1. Q. **(The monitoring officially reported by WASA to EPA for the District for 2000-2001 included four samples above the lead action level, with two of those samples registering above 100 ppb.) Did EPA Region III view these results as a matter for concern? If so, what did EPA do in response?**

   A. The sampling results that the District of Columbia Water and Sewer Authority (WASA) submitted to EPA for the 2000-2001 monitoring period indicated that neither the lead nor copper action level had been exceeded at the 90th percentile. The 90th percentile value reported for lead was 8 parts per billion (ppb).

   There are several reasons why samples may have high lead levels. One is that the water is more corrosive and more lead is leaching from all the pipes. In such a situation, many samples with elevated lead levels would be expected, but that was not the case during the 2000-2001 monitoring period. Another reason could be that minute particles of the mineral coating or scale (which contains lead carbonate minerals) that builds up on lead pipes and lead-bearing faucets and fixtures over time sloughed off and was collected in the sample bottle. This material can be liberated from the pipe wall from opening and shutting valves too quickly or if the pipe was disturbed in some other way. The presence of such particles in samples would yield high lead levels.

   Most of the lead test results from the 2000-2001 monitoring period were very low, indicating that the water was not causing widespread leaching of lead from customers' plumbing during that monitoring period.

2. Q. **What did EPA Region III do in response to the August 2002 WASA test results between September 2002 and May 2003? Did EPA view these test results with any sense of urgency?**

   A. In response to WASA's exceedance of the lead action level for the monitoring period July 2001-June 2002 (report received August 27, 2002), EPA met with WASA staff on September 4, 2002 to discuss the actions that WASA needed to undertake to comply with the Lead and Copper Rule (LCR): the public education and lead service line replacement program requirements and the resumption of full lead and copper tap sampling.

   At the September 2002 meeting, there was also discussion regarding the potential causes of the elevated lead levels during that sampling period, including the drought of 2001 and its impacts to the Potomac River water quality, the transition to chloramination for secondary disinfection, or other water quality changes. EPA,

WASA, and the Washington Aqueduct agreed to review the corrosion control treatment process to determine what may have caused the lead action level exceedance and what could be done to correct it. Both EPA and WASA subsequently engaged contractors to help conduct the corrosion control review.

In the interim, EPA Region III determined that WASA was carrying out the public education program as required by the regulations. However, it is now clear that WASA's outreach program was ineffective and did not have the impact intended by the LCR. The Region concentrated its efforts on a technical review of the corrosion control treatment issue, offering assistance to the Washington Aqueduct and WASA on refinements to this treatment through contractors and agency staff. EPA did not receive the data from WASA's expanded lead service line sampling program which indicated a more significant and widespread problem until the late fall of 2003.

3. Q. **How did EPA react to Mr. Ball's warnings? Were any written documents prepared as a result of this situation? If so, please supply a copy of them.**

A. EPA Region III responded promptly when Mr. Ball, the D.C. State Liaison Officer for Region III, brought greater focus to the issue of lead in DC drinking water in late November 2002, providing a summary of the issue internally, notifying WASA of an ineffective communication and alerting the DC Department of Health to the general problem. The relevant e-mails and documents are enclosed with this response as an attachment.

As these e-mails and documents show, an e-mail from Mr. Ball on November 21 indicated that he had contacted Jon Capacasa, acting director of the Region's Water Protection Division, about the issue. Mr. Capacasa immediately looked into the matter and his staff prepared two documents. The first, prepared within four days, was a summary of the lead situation in D.C., which was shared internally in the Water Protection Division and provided to the D.C. Department of Health by Mr. Ball. The second was a concise status report on the D.C. WASA exceedance, which was prepared in late November and circulated in early December for the purposes of alerting regional management to the issue.

Both the summary and the status report indicated that WASA was moving forward to meet its compliance obligations under the LCR and that EPA was focusing its primary attention on working with the Washington Aqueduct "to revisit the corrosion control treatment options." The documents also pointed out that WASA had the direct regulatory obligation to resume full monitoring for lead at consumers' taps, prepare and deliver a public education program to advise consumers, and develop and implement a lead service line replacement program. The Water Protection Division had determined that WASA was fulfilling obligations under the LCR and informed management of this at a meeting in January. The division continued to focus on ensuring that WASA complied with the requirements of the rule.

Mr. Ball sent an e-mail on November 26, 2002 to officials in the District of Columbia Department of Health which included the three-page summary of the lead situation in the District. Mr. Ball noted in his e-mail that he had found the summary to be "helpful." The e-mail also noted that there were "difficult public health questions to be answered" and offered the region's assistance to the Health Department.

On November 27, 2002, George Rizzo, EPA Region III's drinking water program manager for the District of Columbia, immediately forwarded to WASA's public affairs office a recommendation sent to him in an e-mail from Mr. Ball that WASA make a lead brochure on its website more accessible to consumers.

Even though the actions noted were taken at the time, the Region is taking a critical look back at how it could have done a better job in ensuring that the public interest was served by WASA's subsequent actions related to public notification and education. As a result of WASA's ineffective communications, many people who needed to know about lead in their water did not know. The Region has changed its operating procedures in reviewing compliance with the LCR to better determine whether the water system is meeting both the letter of the rule and the spirit of the rule, which encourages robust communication with the public. The revised procedures allow for greater scrutiny by regional staff of compliance and public education materials, with more internal controls and increased management review and notification. Public education materials will be reviewed by specialists in effective public communication in addition to technical staff to ensure that they are adequate and responsive.

4. Q. **Did the information in the August 2002 monitoring report in any way justify a limited or less urgent response?**

A. The Lead and Copper Rule requires a water system to initiate the same response actions regardless of the magnitude of the action level exceedance or the number of samples that exceed the action level: public education, increased sampling and lead service line replacement. At the time of th August 2000 report, EPA believed that a fresh look at corrosion control treatment, as well as the additional responses required by the LCR, were appropriate to address the problem.

EPA Region III began to work immediately with WASA to investigate the cause of the change in lead levels, as evidenced by the meeting initiated by EPA within 10 days of receiving the compliance report on August 27, 2002. EPA, WASA and the Washington Aqueduct realized that the cause of the action level exceedance needed to be identified so that the corrosion control treatment could be adjusted or changed to provide a long-term solution.

5. Q. **Did EPA have reason to believe that WASA had an effort underway to determine the cause of this spike in lead levels and that WASA would be successful in solving this problem without EPA intervention?**

A. EPA was aware that WASA was investigating the problem and had employed a contractor capable of bringing competent expertise to address the corrosion issue. EPA engaged its own consultant to provide additional expertise to guide WASA's efforts and to advise EPA in its assessment of WASA's studies.

6. Q. **Did these results [expanded lead service line testing results, in report received by EPA on October 27, 2003] indicate definitively that the corrosion control program wasn't working?**

A. Data included in the October 24, 2003 report (received by EPA on October 27) showed a large number of service line samples with lead above the action level. The results reinforced the operating assumption that optimal corrosion control treatment was not working effectively.

This sample set represented a new body of information for EPA, the first large scale testing of water that sat undisturbed in lead service lines for extended periods of time (six or more hours). The testing was done in connection with WASA's lead service line replacement program.

7. Q. **Did EPA request or require immediate action by the Army Corps and WASA to investigate the problem? If so, what action did EPA request or require?**

A. EPA and WASA were already investigating the problem when the report on the lead service line program was received by EPA on October 27, 2003. EPA was also aware that the 2003 public education program had just recently been implemented and that WASA was sending results, with flushing instructions, to those homes whose lead service lines tested above the action level. We believed that the actions taken would reduce the public's exposure risk to lead. We were unaware at the time that the sample results with the flushing recommendations were not getting to the residents promptly.

Dr. Marc Edwards, a sub-contractor to EPA Region III at the time, had just submitted his report on the research he had conducted over the past several months. He provided a face-to-face briefing to EPA, WASA and the Aqueduct in November of 2003, recommending that more research be conducted. Dr. Edwards has testified that he was not aware of the lead service line sample results until February 2004, so his recommendations were not influenced by that information.

WASA developed a research plan that it presented to the Washington Aqueduct wholesale customer board in January of 2004 to help find the cause of the problem. EPA did not immediately require the Aqueduct to change treatment processes because it wanted the system to have a full understanding of potential consequences. Rather, EPA significantly expanded the ongoing research to find the appropriate treatment solution.

8. Q. **What, if anything, did EPA do to ensure that people who live and work in the District understood the scope and severity of the problem?**

A. The October 27, 2003 report was reviewed solely by our technical staff for compliance with the regulation on lead service line replacement.

Although WASA provided letters with results and instructions to customers whose lines were tested, those communications were not promptly delivered nor were they effective in informing the public of the magnitude of the problem or in conveying the steps families and individuals should take to protect themselves.

Region III has taken a critical look back at how it could have done a better job in its oversight of WASA, and revised its procedures to assure that any shortcomings in public outreach are identified early and corrected. We have since reviewed letters going to homeowners with sample results and flushing instructions. EPA led the effort to develop a consensus recommendation on tap flushing instructions for homeowners with and without lead service lines. This was done both to assure that the most current technical information regarding the specific District situation was used to reduce consumer risk, and to help clarify the multiple, and sometimes conflicting, messages that were being delivered to the public.

EPA has developed a comprehensive web site specifically addressing the drinking water concerns in the District and providing consumers with current information and advice on reducing lead exposure, and we have recommended changes to WASA's Internet site on several occasions. We have recorded radio messages, in English and Spanish, on topics including flushing and water testing, the proper use of flushing in combination with filters, and on blood lead level testing. We have also deployed several Community Involvement Coordinators temporarily to assist in communications with community groups in the District, and have established a liaison with a coalition of advocacy and community organizations to help inform future communication efforts.

EPA has been undertaking a thorough review of elements of the public education program implemented by WASA in 2002 and 2003, and we are concluding a study of best practices used by other utilities. This will be provided to WASA as recommendations for WASA's future public education efforts. Through EPA, and at the direction of the District Government, WASA is also developing a revised public education plan.

9. Q. **Did EPA give authorization for WASA to invalidate any test results, either in 2001 or any other time? If so, who authorized the invalidations? Was EPA informed in any manner of WASA's intent or desire to invalidate some samples?**

Please provide any records relating to communications between WASA and EPA or within EPA on this point.

A. EPA Region III has no record of any request from WASA to invalidate lead or copper samples at any time, nor do we have any record of any EPA authorization of sample invalidation. EPA staff and managers are not aware of any authorization EPA provided to WASA to invalidate samples. To leave no doubt, EPA Region III continues to investigate this matter through internal document and computer searches as well as an official Information Request to DC WASA under Section 1445 of the Safe Drinking Water Act. EPA has requested that all records be provided to us within 21 days following WASA's receipt of our March 31, 2004 information request. EPA will provide to the committee any and all records of communications between Region III and WASA, should any be identified.

10. Q. **What oversight of such decisions [i.e., the Washington Aqueduct's conversion to chloramines] does EPA exert?**

A. The regulations governing disinfection of water supplies require a water system to consult with the primacy agency, in this case EPA Region III, prior to making a change in disinfection practices (section 141.172(c)). With respect to the Lead and Copper Rule, the regulations require that the system notify the primacy agency of the treatment change. The regulations do not require that a water system obtain approval from the primacy agency prior to making a treatment change. When the Washington Aqueduct began planning to change from chlorine to chloramine, they notified EPA Region III, included the Region in their planning meetings and continually advised the Region on research conducted by their contractors. The Aqueduct held a briefing for EPA Region III and their wholesale customer board to propose a change to chloramines as a secondary disinfectant.

EPA has a guidance document that covers the topic of simultaneous compliance with other regulations when adjusting disinfection treatment. That guidance recommends that water suppliers consider the potential for chloramines to cause nitrification in the distribution system. Nitrification can cause pH to drop, which would increase corrosivity. The Lead and Copper Rule also suggests that if a water supplier changes any treatment process, it should consider the potential impacts to corrosion control treatment. In its implementation plan for the switch to chloramines, the Washington Aqueduct identified a protocol for monitoring for nitrification.

The Lead and Copper Rule (141.81(b)(3)(ii)) indicates that a state may require a water system to conduct a study of a planned treatment change and its potential effects on corrosion if the state sees reason to do so. Given that the Aqueduct had an adequate plan in place to monitor indicators of chloramine-caused corrosion, and that the Aqueduct's contractor, with extensive experience in preparing water systems for conversion to chloramines, had previously not experienced any adverse effects on corrosion from conversion to chloramine for disinfection, EPA Region III did not

believe there was a reason to require pre-conversion studies. The Aqueduct reported that no evidence of nitrification was observed during the six month period after the switch over to chloramine. The Aqueduct continued to conduct reduced sampling on a regular basis to monitor for nitrification and reported that no evidence of nitrification was observed.

11. **Q. What changes in EPA's role are being changed or implemented?**

K. EPA will strongly encourage or require, where authorities exist, that the District's water utilities seek EPA approval on treatment changes. The Lead and Copper Rule requires that a water system notify the primacy agency of any changes in treatment (141.90(a)(3)). Neither SDWA nor EPA's implementing regulations require formal approval by EPA for non-corrosion control related treatment changes. Through the consultation requirement, primacy agencies and utilities are encouraged to work closely together at a technical level to ensure that treatment changes are effective and do not create new risks. States are required to have authority to establish and maintain activities to assure that the design and construction of water system facilities will be capable of complying with drinking water regulations (section 142.10(a)(5)) and could have procedures in place to require formal approval. However, EPA does not have design approval authority. The regulations do, however, allow a primacy agency (including Region III) to require additional monitoring or other actions to ensure that treatment changes do not impact corrosion control (141.81(b)(3) and 141.86(d)(4)(vii).

For any future major change in operations at either the Washington Aqueduct or at WASA, EPA Region III will seek additional external expertise, both from other EPA offices and private consultants with the appropriate expertise, to assist us in evaluating treatment changes. The D.C. Department of Health will also be consulted in the decision making process. If appropriate, the Agency will also require that the Aqueduct and/or WASA carry out additional monitoring or other actions to ensure that changes in treatment do not negatively impact corrosion control, although, as indicated above, Region III believed at the time that the Aqueduct's monitoring program following the change to chloramines was adequate.

12. **Q. How does or should EPA manage the 'simultaneous compliance' or synergistic effects of different decisions on a system's water supply?**

A. As mentioned above, some of EPA's regulations recommend that the water utility conduct desktop or other studies to research potential impact of one treatment change on the rest of the treatment plant and distribution system's performance. The Simultaneous Compliance Manual for treatment changes required for compliance with the disinfection byproducts regulations covers potential impacts of disinfection changes to other processes such as corrosion control. It recommends desktop or pilot scale studies be conducted if the treatment change is likely to impact the corrosion

control process. No other regulations cover this aspect of the simultaneous compliance issue in a formal way.

State agencies with primacy for the Safe Drinking Water Act programs are required to develop and enforce a permitting process that ensures that water utilities meet minimum requirements for designing, building and implementing treatment processes. Within state permitting processes, states may have the ability to require bench scale or pilot scale studies of proposed treatment options prior to granting a construction permit. The regulations do not provide EPA with a similar authority. However, Region III does, and will continue to, consult extensively with the Aqueduct regarding any contemplated treatment change. With EPA's participation and technical assistance, a technical workgroup including representatives of both WASA and WA is currently conducting pilot/bench scale studies to determine if the change to chloramines was responsible for the current lead situation, and if so, how best to resolve it. EPA will encourage greater use of such studies for any future treatment changes.

13. Q. **Did EPA Region III staff review each of these reports [WASA's Lead and Copper Public Education Program Reports for 2002 and 2003]? In each case, did Region III find that WASA's notification efforts met the requirements of the regulations? Did Region III consider whether WASA's notification in fact was adequate to inform the public, and if so, what was Region III's conclusion? Did Region III have any communications with WASA regarding the adequacy of each of these reports? If so, please indicate the dates, form and substance of all such communications.**

A. EPA staff reviewed these reports to ascertain that the required notification materials had been prepared and distributed to targeted populations. EPA did not immediately identify the deficiencies in language content, distribution and delivery techniques that we have since determined to exist.

Upon further review, in February 2004, EPA found certain deficiencies in the public education materials that WASA produced in 2002 as well as in 2003. We determined that WASA failed to demonstrate that it issued a Public Service Announcement in April 2003 (i.e., six months after its initial PSA in October 2002) and failed to demonstrate that it provided public education materials to major newspapers in September 2003, as required by regulation. EPA contacted WASA (by e-mail, on February 12 and with follow-up on February 15, 2004) to determine whether WASA could demonstrate that those requirements had, in fact, been met.

EPA's February 2004 review also found that language used in several WASA public education items (in previous years' PSAs and in an "alert" intended to encourage customers to read educational information in billing inserts) did not track exactly with mandatory language contained in 40 CFR 141.85, leaving out key words that would have helped convey the seriousness of the problem.

In February 2004, EPA reminded WASA on several occasions about its then-current obligation to issue a PSA (in telephone discussion and by e-mail). To assist WASA in the development of a more timely and effective message, EPA offered real-time input to a draft PSA via e-mails and correspondence delivered February 25 through 27, 2004.

EPA also conducted an on-site review on March 10-11, 2004, to gain additional information as to how WASA addressed previous years' public education requirements.

In a letter dated March 31, 2004, EPA notified WASA General Manager Jerry Johnson that its preliminary analysis had identified deficiencies, including those noted above, that may constitute violations of the Lead and Copper Rule. In a separate letter, also dated March 31, 2004, to General Manager Johnson and WASA Board Chairman Glenn Gerstell, EPA requires (among other things) submission of additional information from WASA regarding the content and distribution of various public education materials. WASA was obliged to respond to both letters by April 22, 2004. WASA provided material to respond to the information request on April 21, 2004 and also requested a meeting to respond to the second letter. WASA met with EPA on April 23, 2004 to discuss potential issues of non-compliance and will provide a follow-up written response by May 5, 2004 to EPA.

14. Q. **Is Region III's oversight of the WASA notification process any different from how states oversee their jurisdictions' notification activities? If not, is EPA concerned that notification efforts may also be inadequate in other jurisdictions? If so, what steps is EPA taking to address this concern?**

A. States are expected to carry out a review of public notification requirements in accordance with the regulations. It is difficult to determine at this time whether states go beyond the basic regulatory requirements when overseeing the activities undertaken by water systems within their jurisdiction. EPA will initiate a review of implementation of the LCR during 2004 which will pay special attention to how water systems and states are carrying out requirements related to public education and notification.

Region III is now cognizant that minimum requirements cannot be relied upon to meet the needs of individual and extraordinary situations, and has heightened the attention it will give in reviewing the content, delivery methods and effectiveness of communication with the public.

Region III has already made specific changes to standard operating procedures for compliance reviews. Compliance reports from WASA and the Washington Aqueduct now are sent to the office responsible for Safe Drinking Water Act enforcement. That office, in consultation with the drinking water program experts, will make compliance determinations. This process ensures that no fewer than four

EPA staff persons, two of them managers, will see each compliance report. The revised procedures also specify that communications expertise be brought to the review process.

The Region has also initiated an evaluation of WASA's past public education efforts to identify where and how effectiveness may be improved. Most members of the project team, which comprises EPA staff from Region III, Region I and Headquarters offices, have communications expertise and experience. The team will report its findings and recommendations to the Regional Administrator by April 30. These are expected to include recommendations for improved public outreach and communication for WASA, as well as information on best practices used elsewhere by water suppliers for the same or similar situations. Our experience in the District and "lessons learned" will certainly contribute to the national compliance review that is being undertaken by EPA.

15. Q. **If it is confirmed that partial lead service line replacement raises lead levels, how will EPA address this problem? Will EPA require WASA to replace the full lead service lines? Is any Federal funding potentially available to help fund full lead service line replacements?**

A. Until the corrosivity of the water is brought back into balance, and a protective coating develops on internal surfaces of pipes, it is true that lead may continue to leach from any portion of lead service lines that remain in place. The Lead and Copper Rule requires that a water system remove the portion of the lead service line under its control, and notify the property owner of its plan to remove that portion of the line so the private owner may coordinate removal of his portion of the line at the same time. Under District law, WASA owns that portion of the service line which is on public property.

Limited studies in the past indicate that, in general, lead levels increase for a period of time after a partial replacement of a lead service line; typically two weeks to four months. These same studies show that after this time period, lead levels drop to below what they were when the entire lead service line was in place. Samples taken after partial replacement of lead service lines in the District have, in some cases, shown that concentrations of lead remain quite high, likely because of replacement techniques which expose more cut surfaces, more readily leaching lead, and because of release of particulate lead. Some exceptionally high values (a few reported as high as 24,000 to 48,000 ppb lead) suggest the presence of particulate lead after pipes had been severed. After thorough flushing of the water line, the concentration of lead decreased dramatically. However, portions of lines left in the ground may continue to serve as sources of lead, depending on the length of the remaining pipe.

WASA, DOH, EPA and the District Government have formed a task group to determine the best method/technology for partial lead service line removal, i.e., a method that will achieve minimum continuing exposure to lead, and that meets

minimum regulatory requirements to remove that portion of the line for which WASA is responsible. The group's recommendation is expected in late April, and WASA's approach must be provided to EPA by May 14. EPA has indicated its preference for removal of entire lines, or as much of the service line as is feasible.

WASA will, with the property owner's cooperation, replace the portion of a line on the private property when WASA's portion is replaced, and the property owner may reimburse WASA, at cost. However, to date, very few property owners have agreed to participate in line replacement. We understand that the cost to the owner averages between $1,000 and $2,000, which is daunting, if not prohibitive, for many property owners. We have encouraged WASA to explore potential options for owner participation incentives and assistance.

16. Q. **What resources does EPA Region III have, in terms of funding levels and personnel (in full-time equivalents or FTEs), for overseeing and enforcing the SDWA? What are the equivalent resource levels for these activities in the other EPA regions?**

A. Region III is allocated 31 FTEs for SDWA oversight and implementation in D.C. and the states under EPA Region III's jurisdiction (DE, MD, VA, WV, PA). The Region also receives $177.2 thousand in extramural funds, which includes travel dollars. This allocation supports all SDWA functions with the exception of enforcement, including state PWSS program oversight; laboratory certification; source water protection; State Revolving Fund oversight; underground injection control (including direct implementation in three states); infrastructure and program grant management; water system security; operator certification; technical assistance and training; data base management, and correlative administration and management functions.

Resources for enforcement and compliance assurance are allocated to the Region without specific designation to statute or program area, so it is not possible to identify specific resource allocations for SDWA enforcement. In 2004, approximately seven to nine FTE are being utilized for all aspects of SDWA enforcement in Region III.

Resources (FTEs) allocated to other EPA Regions for Drinking Water programs (excluding enforcement) in 2004 are listed below. These amounts include resources needed to directly implement tribal programs (and Wyoming in Region 8):

	FTE	Extramural $ (x 1000)
Region 1	24.8	$168.6
Region 2	32.6	$160.0
Region 4	55.5	$227.0
Region 5	54.3	$188.7
Region 6	48.8	$237.7
Region 7	28.0	$155.9
Region 8	42.5	$249.7

Region 9	38.0	$266.7
Region 10	25.1	$227.7

17. Q. **How much of those resources are devoted to SDWA oversight and enforcement for the District of Columbia? Specifically, how many staff are dedicated full-time to drinking water oversight and enforcement for the District of Columbia? How many positions, if any, are dedicated part-time to SDWA enforcement for the District of Columbia?**

A. EPA Region III received approximately $359,000 for fiscal year 2004 from the national Public Water System Supervision (PWSS) appropriation to administer the PWSS Program for the District of Columbia. Funds from the grant cannot be used to cover internal EPA staff or travel. Approximately 1 FTE has been allocated internally for routine SDWA oversight in the District of Columbia. The allocation for SDWA enforcement in the District varies, depending on whether there are active enforcement cases and whether specific compliance requirements warrant special review. For example, additional resources have been dedicated to assist EPA in addressing the present concerns in the District. Four additional FTEs in the Water Protection Division are presently working virtually full-time on supporting EPA oversight and enforcement actions in the District. Region III has temporarily assigned three Community Information Coordinators to assist in public outreach and information dissemination, and additional communications staff are working on special tasks to assess public education actions undertaken to date, and to identify "best practice" recommendations for the future.

18. Q. **What were the funding levels and FTEs for EPA SDWA enforcement activities in fiscal years 2000-2004?**

A. As noted above, it is not possible to attribute specific resources for SDWA enforcement and compliance assurance activities, as enforcement and compliance assurance resources are aggregated in the Region's allocation without designation for specific statutes and programs.

19. Q. **If EPA determines that the action plan [developed by WASA to meet its commitments] is sufficient, how will EPA monitor and enforce that action plan? If WASA does not agree to, or does not carry out, an action plan called for by EPA in a timely manner, will EPA consider issuing an enforceable administrative order?**

A. The City Administration and WASA have provided written assurances of their intent to fulfill the Interim Action Plan commitments in letters of March 4, March 10, March 17 and March 30. EPA monitors the progress on the Action Plan through written progress reports from WASA, periodic meetings and conference calls as needed. WASA has provided progress reports on the initial filter distribution process, and has

indicated that the initial distribution of filters was completed by April 10. Monthly progress reports have been requested on the other major elements of the action plan. EPA will closely review these reports and should we find the progress insufficient on key elements of the plan, we will promptly escalate attention to the matter to the City Administrator and Deputy Mayor who has assured us of his continuing oversight of this matter for the City.

Should WASA not fulfill an Interim Action Plan commitment in a timely manner, EPA will direct attention to this item first to the City Administrator's office and request a prompt response. Lacking an acceptable response from the City and/or WASA, EPA stands ready to use the available enforcement tools provided under the Safe Drinking Water Act, including the issuance of administrative orders, administrative penalty actions, emergency authorities under Section 1431, and judicial actions as appropriate. Use of the emergency authorities provision requires a pre-determination by EPA that state and local authorities have failed to act to address an imminent and substantial endangerment situation.

20. Q. **Is EPA considering providing other assistance to the District, such as helping to fund of the provision of alternative water sources or expanded testing?**

A. EPA will remain in frequent contact with City officials to identify their specific needs for assistance with these and other matters. We will apply existing resources, capabilities and authorities to the extent feasible in this situation. As part of EPA's annual grants to the District, the agency is providing a total of $11.3 million in federal funding assistance that will be used for the lead service line replacement program. We have also stationed additional personnel in the DC area to assist with community outreach meetings, public information initiatives, and related response needs.

We are providing extensive technical assistance in the review and execution of sampling plans and protocols to ensure they are sound and supportable. We have provided hands-on assistance with the school sampling protocol and training.

EPA has convened and is supporting with federal funding an Independent Peer Review Panel to provide scientific evaluation and oversight of the action plans under development to address the corrosion control treatment issues. We have also convened the Technical Expert Working Group and are providing contractual support to that group as they address the underlying cause of the lead issue, the corrosivity of the water. We will continue to stay in touch with local officials to identify other important areas where EPA may provide assistance.

21. Q. **Please describe the types of information that states are required to report to EPA under the lead and copper rule, or encouraged to report under any relevant EPA guidance. Please indicate any requirements to report lead levels in drinking water, response actions taken upon an exceedance of the action level, corrosion control activities, and changes to drinking water treatment methods.**

A. Pursuant to the regulations, states must report the following information under the Lead and Copper Rule (40 CFR142.15(c)(4)):

- The name, PWS ID number and 90th percentile lead levels for each monitoring period for all large and medium-size systems [systems serving 3,300 persons or more],
- The name, PWS ID number and 90th percentile lead levels for each monitoring period for all small systems that exceeded the lead action level,
- The name, PWS ID number and 90th percentile copper levels for each monitoring period for all PWSs that exceeded the copper action level,
- All names and PWS ID numbers for each PWS for which States have designated optimal water quality parameters, or which States have deemed to have optimized corrosion control under §141.81(b)(1) or (b)(3), the date of the determination, and the paragraph(s) under which States made their determination.
- All names and PWS ID numbers for each PWS required to begin replacing lead service lines, and the date each system must begin replacement.
- All names and PWS ID numbers for each PWS that has implemented optimal corrosion control, completed source water treatment requirements, and completed lead service line replacement requirements, and the date of the State's determination that these requirements have been met.

In addition, states are required to report to EPA any monitoring or reporting violations, or failure to meet any of the above requirements, including public education. EPA also encourages states to report the 90th percentile for all systems, even if the 90th percentile is below the action level. States are not required to report changes in treatment technology to EPA, although systems are required to report that information to the state.

22. Q. **With respect to the 90th percentile monitoring results, for which years does EPA currently have data? When is or was the deadline for reporting the 2003 data? Please provide a summary of the 90th percentile lead monitoring results nationwide since 2000 by state, to the extent that EPA has that information.**

A. Under the January 2000 revisions to the Lead and Copper Rule, States are required to report the 90th percentile results for all systems serving more than 3,300 persons, and the 90th percentile results for any smaller system that exceeds the action level. This requirement began with information due in January, 2002 (although states could begin reporting in 2000). However, EPA knows that the data is incomplete. As of January, SDWIS/FED had information for only 22% of the systems over 3,300 and 23 states and Puerto Rico had not reported any information.

On March 25, 2004, the Acting Assistant Administrator for Water sent a memorandum to Regional Administrators asking them to work with their states to enter required information into SDWIS/FED. States have been asked to enter 90th percentile information for systems serving more than 50,000 by April 15 and for systems serving between 3,300 and 50,000 people by May 15. Finally, states have been asked to enter information for small systems that have exceeded the action level

by the end of June. The data collected should represent all sampling conducted through the end of 2003.

Rather than provide incomplete information at this time, EPA will provide information to the Committee on 90th percentile levels for systems serving more than 50,000 in early May once the data has been fully compiled. Subsequent reports can be made available to the Committee after the reporting periods.

23. Q. **For each jurisdiction that exceeded the action level in or after the year 2000, please indicate whether the jurisdiction is still in exceedence and describe the actions that have been taken to notify the public and correct the action.**

A. At the hearing before the Committee on March 5, Acting Assistant Administrator Grumbles stated that, based on information available in SDWIS/FED at the time, four systems serving more than 50,000 (including D.C.) had exceeded the AL since 2000. With the exception of D.C., all systems had elevated action levels (AL) during 2000 and returned to levels below the action level by 2001.

The Ridgewood, NJ water department exceeded the action level AL in 2000 with a 90th percentile reading of 17 ppb during two six-month monitoring periods in 2000. The exceedance is thought to have been due to samples collected from homes that were closed for long periods of time prior to sample collection. After the utility added orthophosphate as a corrosion inhibitor the 90th percentile level has been less than the action level during 2001-2003.

St. Paul, Minnesota exceeded the action level for several monitoring periods between 1997 and 2000. The utility tested a series of methods by which to control corrosion. Both pH adjustment and use of a phosphate inhibitor failed to maintain 90th percentile levels below the action level. In 2000, the utility adopted corrosion control using tin chloride and pH adjustment together, and achieved 90th percentile levels below the action level for four consecutive monitoring periods. In February 2003, the State of Minnesota deemed that the utility had optimized corrosion control and the utility was allowed to proceed to reduced annual monitoring.

Port St. Lucie, Florida exceeded the action level in the last 6 month monitoring period of 1999 (90th percentile of 31 ppb) and the first 6 month monitoring period of 2000 (90th percentile of 60 ppb). The system installed reverse osmosis treatment during the 1999 to 2000 timeframe. After exceeding the action level, the system did a corrosion control study and adjusted their corrosion inhibitor (orthopolyphosphate). The 90th percentile level decreased to 8 ppb during the last 6 month monitoring period of 2000. Since late 2000, 90th percentile levels for the system have been consistently less than the action level, ranging from 5 to 8 ppb.

Please note that while EPA will report on additional systems that are identified as having exceeded the action level, the Agency will not likely follow up to determine the actions taken by each individual system to address the exceedance. However,

EPA will follow up on selected utilities during a review of compliance and implementation that the Agency will undertake during 2004.

24. Q. **Which jurisdictions nationwide have lead service lines? Have any of these jurisdictions experienced widespread elevated lead levels?**

A. EPA does not systematically collect information on whether systems have lead service lines in their distribution systems. A 1990 report by the American Water Works Association estimated that there were 3.3 million lead service lines in the country. The study identified several states that had more than 100,000 lead service lines (including IL, NY, MIN, MI, WI, OH, IN, MO, and PA).

EPA has some information on lead service lines from the Drinking Water Infrastructure Needs Survey. Systems that are included in the survey can report lead service line replacement as a need. EPA is currently conducting its third such survey. Although the results will not be made available until February 2005, EPA will use preliminary information to undertake a cross-walk of systems identifying lead service line replacement needs with 90th percentile levels. It is important to note that the fact that a system has identified lead service line replacement as a need does not necessarily indicate that the system is experiencing elevated lead levels. Most systems are undertaking replacement of lines as part of their scheduled rehabilitation and replacement program. The 1990 AWWA report estimated that systems were replacing more than 60,000 lead service lines a year, and that was before issuance of the Lead and Copper Rule which requires replacement when action levels are exceeded.

25. Q. **Which jurisdictions use chloramines for disinfection? To EPA's knowledge, have any of these jurisdictions seen an increase in lead levels after switching to chloramines? Is the District the only jurisdiction that has switched to chloramines with elevated levels of which EPA is aware?**

A. Discussions that EPA has had with utilities and associations have not highlighted a major problem of elevated lead levels in systems converting to chloramine use. The Association of Metropolitan Water Agencies provided EPA with information on lead levels and treatment practices at a number of water systems. Systems were asked if they are using chloramines for disinfection and when they implemented that treatment practice. Three systems had switched to chloramines within the past five years and had tap sampling data for lead from both before and after the switch. All three of these systems had 90th percentiles below 5 ppb both before and after the switch to chloramines. Two of these systems distribute water at a higher pH than the water leaving the Aqueduct and the third system uses zinc orthophosphate to control corrosion.

Although EPA does not collect systematic information on the types of treatment used by systems, the Agency's Community Water System Survey, last released in 2002, does have some information on treatment practices used by systems, including

chloramine use. When more complete information on 90th percentile levels is available, EPA may undertake a cross-walk of surveyed systems that identified chloramine use as a treatment practice with 90th percentile levels to determine if they faced any challenges. This issue will also be discussed during a workshop that has been scheduled for May on simultaneous compliance issues associated with the Lead and Copper Rule.

26. Q. **Have any jurisdictions other the District engaged in large-scale samplings for lead (i.e., more than the required 50 or 100 samples per year)? Have any jurisdictions other than the District conducted samplings based on second draw rather than first draw samples? If so, please summarize the results of those samplings.**

A. At this time EPA is unaware of other public water systems that have engaged in large scale sampling such as that undertaken by the District. However, in May, the Agency is holding an expert workshop on sampling protocols for the Lead and Copper Rule which may provide more insight into this question. The Agency is also conducting an implementation and compliance review which will include an assessment of sampling programs used by systems.

27. Q. **Is EPA aware of any studies or evaluations that call into question the adequacy of the current monitoring protocols under the lead rule as a means of detecting lead contamination problems in drinking water? If so, please provide copies of any such studies or evaluations.**

A. EPA is not currently aware of any studies that call into question the adequacy of required tap sampling protocols in identifying lead contamination problems in drinking water. In the case of D.C., the required sampling of 50 taps did identify that there was a lead contamination problem, however, the reaction to this finding did not sufficiently convey the urgency of the problem to homeowners in the District. Papers have been published that identify issues with sampling protocols for assessing the amount of lead leaching from lead and brass fixtures, however, we do not believe these papers have addressed the sampling framework required under the regulations. As noted in the previous answer, the Agency is holding a workshop in May on sampling protocols for the Lead and Copper Rule which may provide more insight into this question.

28. Q. **Does EPA have adequate information at this time to determine whether other jurisdictions besides the District have widespread elevated lead levels?**

A. EPA is still working to collect information that will give a better answer as to whether elevated lead levels are a widespread problem across the nation. As noted in the response to question #22, EPA is working with the states to obtain 90th percentile

levels for all water systems serving more than 3,300 and for systems serving less than 3,300 who have exceeded the action level. The Agency has also been reviewing Consumer Confidence Reports (CCR) for lead information. A review of CCRs for 109 of 130 systems that had exceeded the action level in an initial round of sampling conducted in 1991 found that only 9 systems reported that they had exceeded in the action level in the last few years. One of the systems was D.C. and another was a customer of another system on the list. We are working to determine their current status, but believe that most are now back below the action level. We are also working to review CCRs for additional systems.

29. Q. **Please provide the comparable budget requests for drinking water research, annual appropriations and actual spending on research on corrosion and lead leaching for the years FY2000 through FY2004. What funding levels has the Administration requested for these areas in FY 2005, and what level of funding does EPA anticipate may be available for research on corrosion and lead leaching?**

A. The Agency's research on corrosion and lead leaching has averaged approximately $250,000 per year since FY 2000. At the present time, the Agency is committed to maintaining stable funding consistent with prior years.

Attachment 2

Documents referenced in the response to Question 3:

1) e-mail from Chris Ball to Michael Burke, dated 11/21/2002 (1 p)

2) Lead and Copper Rule Summary for the District of Columbia, November 25, 2002 (3 pp)

3) e-mail from Chris Ball to Ted Gordon, dated 11/26/2002 (1 p) (attachment is November 25, 2002 summary, item #2)

4) e-mail from Chris Ball to Michael Burke, w/ e-mail string (2 pp in all):
   - e-mail from George Rizzo to Libby Lawson, dated 11/27/02
   - e-mail from Chris Ball to George Rizzo, dated 11/27/02
   - e-mail from George Rizzo to Chris Ball, dated 11/27/02

5) Salient Issue for the Week Ending November 29, 2002 (1 p)

6) Water Protection Division Weekly Salient Issues Report, Week ending December 6, 2002 (2 pp). This contains text identical text to Document #5. (It appears that no weekly report was prepared November 29, 2002 (Thanksgiving week), and that this item did not appear until the December 6 weekly report, and was also repeated in the December 13, 2002 weekly report.)

7) Water Protection Division Weekly Salient Issues Report, Week ending December 13, 2002 (2 pp). This contains text identical text to Document #5. (It appears that no weekly report was prepared November 29, 2002 (Thanksgiving week), and that this item did not appear until the December 6 weekly report, and was also repeated in the December 13, 2002 weekly report.)

Chris Ball
11/21/2002 02:18 PM

To: Michael Burke/CBP/USEPA/US@EPA
cc:
Subject:

Mike - - got through to Jon C on the drinking water issue. It was news to him and he is looking into what's going on now. He agreed that if it appears to be a real problem, fast action by EPA would be key and that there would be a strong demand for issue papers.

Also, FYI - - just talked to Pat B and testing apparently still hasn't started at Brentwood. It was scheduled for 9:00am but they have run into problems with both an electric generator, and the main pump for the South Scrubber (the as-of-yet untested scrubber) which have delayed them. Not clear now whether they will get the job done today.

Christopher Ball
Washington, DC Liaison - Region 3
U.S. Environmental Protection Agency
Phone: 202-564-3658
Fax: 202-501-1549

Lead and Copper Rule Summary for the District of Columbia
November 25, 2002

Lead and Copper Rule Background

EPA promulgated the Lead and Copper Rule (LCR) as part of the National Primary Drinking Water Regulations (NPDWRs) in December 1991. The LCR required public water systems to reduce the corrosivity of their finished water so that the leaching of lead and copper from distribution system and customers' pipes was minimized. This corrosion control treatment technique requirement was adopted in lieu of maximum contaminant levels (MCLs) for lead and copper. Effective corrosion control treatment will insure that the lead and copper levels measured at customers' taps are equal to or below the 90th percentile action levels for lead (0.015 mg/L) and copper (1.3 mg/L). The LCR requires that samples be taken at customers' taps in buildings which represent worst case scenarios because they have lead water service lines, and/or copper pipes with lead soldered joints. The number of sample sites is determined by the size of the population served. The maximum number required is 100 for populations served above 100,000.

Lead and Copper Rule Implementation in the District of Columbia

In the District of Columbia, there are two public water systems and both are required to comply with the LCR. The Washington Aqueduct Division of the U.S. Army Corps of Engineers owns and operates two water treatment plants which provide finished drinking water to the District of Columbia Water and Sewer Authority (DC WASA), as well as to Arlington County and the City of Falls Church in Virginia. The Aqueduct is responsible for all corrosion control treatment for its three customer systems. DC WASA is responsible for monitoring for lead and copper at its retail customers' taps. Prior to October 1, 1996, DC WASA's predecessor, the Water and Sewer Utility Administration (WASUA), was responsible for the LCR.

During the initial 6-month monitoring periods in calendar year 1992, WASUA exceed the lead action level both times. In calendar year 1993, WASUA exceeded the lead action level in one of the two 6-month monitoring periods. In subsequent years, WASUA and DC WASA did not exceed the action levels.

Summary of 90th Percentile Lead Levels in DC

Full Monitoring	January 1 to June 30, 1992	0.018 mg/L*
	July 1 to December 31, 1992	0.015 mg/L
	January 1 to June 30, 1993	0.011 mg/L
	July 1 to December 31, 1993	0.037 mg/l*

	January 1 to June 30, 1994	0.022 mg/L*
	July 1 to December 31, 1994	0.012 mg/L
	January 1 to June 30, 1997	0.006 mg/L
	July 1 to December 31, 1997	0.008 mg/L
Reduced Monitoring	July 1, 1997 to June 30, 1998	0.007 mg/L
	July 1, 1998 to June 30, 1999	0.005 mg/L
	July 1, 1999 to June 30, 2000	0.012 mg/L
	July 1,2000 to June 30, 2001	0.008 mg/L
	July 1, 2001 to June 30, 2002	0.075 mg/L*

* Exceeds lead action level

Corrosion Control Treatment

The Aqueduct developed and implemented corrosion control treatment as required by the LCR. This treatment was effective until recently. During the most recent monitoring period which ended in June 2002, DC WASA exceeded the lead action level with a 90th percentile of 0.075 mg/L. It should be noted that this exceedance is not a violation of the LCR. However, DC WASA is required to complete the following activities to insure its compliance with the LCR:

- Resume full monitoring for lead and copper at customers' taps. DC WASA will begin sampling at a minimum of 100 customer taps during two 6-month monitoring periods in 2003 (January 1 to June 30 and July 1 to December 31).

- Prepare and deliver a public education program to advise consumers how they can protect themselves from exposure to lead in drinking water, and to inform the public regarding steps that will be taken to reduce the lead level. This program has been implemented with the publication of a brochure concerning lead in the environment which has and will continue to be distributed to the public in the District of Columbia.

- Develop and implement a lead service line replacement program. The LCR requires that a system that exceeds the lead action level after corrosion control treatment has been installed must replace 7 per cent of its lead service lines which the system owns each year until all of the lines have been replaced, or until tap water monitoring indicates that its 90th percentile lead level is below 0.015 mg/L. In the District of Columbia, ownership of the water service lines is shared between DC WASA and the property owner. DC WASA

has begun the development of their program which will prioritize lead service line replacement according to lead levels. It should be noted that the success of this program will also depend on the owners of buildings targeted for lead service line replacement agreeing to replace their portion of the service line.

Suspected Cause of Lead Action Level Exceedance

In the last two years, there have been two major events which may have caused the relatively sudden increase in lead levels in the District's drinking water system. The first is the extended drought condition which has lowered water quality in the Potomac River which is the sole source of the District's drinking water. Source water alkalinity has increased which has made it difficult for the Aqueduct to elevate the pH of the finished drinking to the desired level for optimum corrosion control treatment. The Aqueduct adds lime to elevate the pH, but the amount of lime added depends upon the alkalinity of the finished water. Too much lime results in cloudiness in the finished drinking water caused by the precipitation of calcium carbonate.

The second event was the conversion from free chlorine to chloramines as the secondary disinfectant applied by the Aqueduct to the finished water. The conversion was made to reduce the formation of trihalomethanes in the Aqueduct's customers' distribution systems. However, it is suspected that the ability of chloramines to deter biofilm formation within distribution system pipes may also leave the pipe interiors more susceptible to corrosion.

Future Actions

In addition to DC WASA's compliance activities, EPA will work with the Aqueduct to revisit corrosion control treatment options.

Chris Ball
11/26/2002 03:57 PM

To: tgordon@dchealth.com
cc: vincent.nathan@dc.gov, (bcc: Michael Burke/CBP/USEPA/US)
Subject: Lead Drinking Water Exceedances

Ted - - As you likely know already, recent tests of DC tapwater, following the procedures outlined in the Lead and Copper Rule, have exceeded EPA's 90th percentile action levels for lead (0.015 mg/L). I have attached a summary of the lead situation in DC which was prepared by EPA Region III's Water Protection Division (as a word perfect document). I found the summary to be helpful and hope that you will as well. There are obviously difficult public health questions to be answered, which the District is far from alone in facing. Please let me know if I EPA can be of any assistance to your agency as you continue to work to protect the public health.

Chris

LCR Summary for DC.w

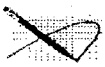
Christopher Ball
Washington, DC Liaison - Region 3
U.S. Environmental Protection Agency
Phone: 202-564-3658
Fax: 202-501-1549

Chris Ball
11/27/2002 09:46 AM

To: Michael Burke/CBP/USEPA/US@EPA
cc:
Subject: Re: LCR Summary for DC

FYI - - -

Christopher Ball
Washington, DC Liaison - Region 3
U.S. Environmental Protection Agency
Phone: 202-564-3658
Fax: 202-501-1549
----- Forwarded by Chris Ball/DC/USEPA/US on 11/27/02 09:46 AM -----



George Rizzo
11/27/02 09:38 AM

To: llawson@dcwasa.com
cc: Chris Ball/DC/USEPA/US@EPA
Subject: Re: LCR Summary for DC

Libby,

Attached is a message from Chris Ball, EPA's DC Liason, concerning the accessibility of WASA's lead brochure on your web site. It took me a while to find it. Also, could you please send me about two dozen copies of it. Thanks.

George

---- Forwarded by George Rizzo/R3/USEPA/US on 11/27/2002 09:35 AM ----

Chris Ball
11/27/2002 09:34 AM

To: George Rizzo/R3/USEPA/US@EPA
cc:
Subject: Re: LCR Summary for DC

Thanks George. One recommendation we might want to consider making to WASA would be to unbury the document in their website. If they really want to make the information accessible they would a) put a link on their front page saying 'for information on lead click here' and b) include a 'text only' version of the document on the site - - it is currently a 12 page pdf that my aging computer has really struggled with so I can only imagine the problems other DC residents may have in downloading it.

Just a couple of possible suggestions - - understanding that WASA has already taken several steps to get this information out.

Thanks for forwarding it along.

.Chris

Christopher Ball
Washington, DC Liaison - Region 3
U.S. Environmental Protection Agency
Phone: 202-564-3658
Fax: 202-501-1549
George Rizzo

George Rizzo

To: Chris Ball/DC/USEPA/US@EPA

11/27/02 08:51 AM

cc:

Subject: Re: LCR Summary for DC

Chris,

A PDF file containing the lead brochure (and other brochures is available on WASA's web site: *dcwasa.com*. There's a menu on the left hand side of their home page. Click on "News & Publications," then "Publications," and finally "Other Reports." The lead brochure is the first one listed.

George

Salient Issue for the Week Ending November 29, 2002

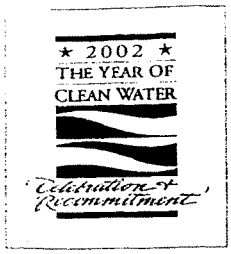
DC WASA EXCEEDS LEAD ACTION LEVEL. During the most recent monitoring period which ended in June 2002, the District of Columbia Water and Sewer Authority (DC WASA) exceeded the lead action level (AL) with a 90th percentile of 0.075 mg/L. This is DC WASA's first exceedance of the lead AL since December 1993. It should be noted that this exceedance is not a violation of the Lead and Copper Rule (LCR) drinking water regulation. However, DC WASA is required to complete the following activities to insure its compliance with the LCR:

- Resume full monitoring for lead and copper at customers' taps in calendar year 2003.
- Prepare and deliver a public education program to advise consumers how they can protect themselves from exposure to lead in drinking water, and to inform the public regarding steps that will be taken to reduce the lead level. This program has been implemented with the publication of a brochure concerning lead in the environment which has and will continue to be distributed to the public in the District of Columbia.
- Develop and implement a lead service line replacement program. The LCR requires that a system that exceeds the lead action level after corrosion control treatment has been installed must replace 7 per cent of its lead service lines which the system owns each year until all of the lines have been replaced, or until tap water monitoring indicates that its 90th percentile lead level is below 0.015 mg/L. DC WASA is formulating a plan to identify, prioritize, and replace 1600 lead service lines in calendar year.

Prior to this AL exceedance, the corrosion control treatment used by the Washington Aqueduct for the District's drinking water seemed to be effective. However, in the last two years, there have been two major events which may have caused the relatively sudden increase in lead levels in the District's drinking water system. The first is the extended drought condition which has lowered water quality in the Potomac River which is the sole source of the District's drinking water. Source water alkalinity has increased which has made it difficult for the Aqueduct to elevate the pH of the finished drinking to the desired level for optimum corrosion control treatment. The Aqueduct adds lime to elevate the pH, but the amount of lime added depends upon the alkalinity of the finished water. Too much lime results in cloudiness in the finished drinking water caused by the precipitation of calcium carbonate.

The second event was the conversion from free chlorine to chloramines as the secondary disinfectant applied by the Aqueduct to the finished water. The conversion was made to reduce the formation of trihalomethanes in the Aqueduct's customers' distribution systems. However, it is suspected that the ability of chloramines to deter biofilm formation within distribution system pipes may also leave the pipe interiors more susceptible to corrosion.

In addition to DC WASA's compliance activities, EPA will work with the Aqueduct to revisit corrosion control treatment options. **Contact George Rizzo, 4-5781**



WATER PROTECTION DIVISION

http://www.epa.gov/reg3wapd

Weekly Salient Issues Report

Week ending December 6, 2002

30th Anniversary! Clean Water Act

http://www.epa.gov/region03/cleanwater.htm

In 1972, Congress enacted the first comprehensive national clean water legislation in response to growing public concern for serious and widespread water pollution. Celebrating 30 Years of progress!

Water Protection Division share drive:

G:\user\share\salientFY03
G:\user\share\salients (previous years)

- **DC WASA Exceeds Lead Action Levels**

ENFORCEMENT CONFIDENTIAL - Do not Distribute

DC WASA Exceeds Lead Action Levels. During the most recent monitoring period which ended in June 2002, the District of Columbia Water and Sewer Authority (DC WASA) exceeded the lead action level (AL) with a 90th percentile of 0.075 mg/L. This is DC WASA's first exceedance of the lead AL since December 1993. It should be noted that this exceedance is not a violation of the Lead and Copper Rule (LCR) drinking water regulation. However, DC WASA is required to complete the following activities to insure its compliance with the LCR:

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- Develop and implement a lead service line replacement program. The LCR requires that a system that exceeds the lead action level after corrosion control treatment has been installed must replace 1/7 of its lead service lines which the system owns each year for seven years, or until tap water monitoring indicates that its 90th percentile lead level is below 0.015 mg/L. DC WASA is formulating a plan to identify, prioritize, and replace 1600 lead service lines in calendar year.

Prior to this AL exceedance, the corrosion control treatment used by the Washington Aqueduct for the District's drinking water seemed to be effective. However, in the last two years, there have been two major events which may have caused the relatively sudden increase in lead levels in the District's drinking water system. The first is the extended drought condition which has lowered water quality in the Potomac River which is the sole source of the District's drinking water. Source water alkalinity has increased which has made it difficult for the Aqueduct to elevate the pH of the finished drinking to the desired level for optimum corrosion control treatment. The Aqueduct adds lime to elevate the pH, but the amount of lime added depends upon the alkalinity of the finished water. Too much lime results in cloudiness in the finished drinking water caused by the precipitation of calcium carbonate.

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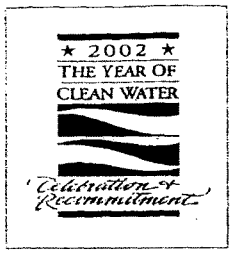
In addition to DC WASA's compliance activities, EPA will work with the Aqueduct to revisit corrosion control treatment options. **Contact: George Rizzo, 814-5781.**



WATER PROTECTION DIVISION

http://www.epa.gov/reg3wapd

Weekly Salient Issues Report

Week ending December 13, 2002

30th Anniversary! Clean Water Act

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- **DC WASA Exceeds Lead Action Level**

DC WASA Exceeds Lead Action Level. During the most recent monitoring period which ended in June 2002, the District of Columbia Water and Sewer Authority (DC WASA) exceeded the lead action level (AL) with a 90th percentile of 0.075 mg/L. This is DC WASA's first exceedance of the lead AL since December 1993. It should be noted that this exceedance is not a violation of the Lead and Copper Rule (LCR) drinking water regulation. However, DC WASA is required to complete the following activities to insure its compliance with the LCR:

- Resume full monitoring for lead and copper at customers' taps in calendar year 2003.
- Prepare and deliver a public education program to advise consumers how they can protect themselves from exposure to lead in drinking water, and to inform the public regarding steps that will be taken to reduce the lead level. This program has been implemented with the publication of a brochure concerning lead in the environment which has and will continue to be distributed to the public in the District of Columbia.
- Develop and implement a lead service line replacement program. The LCR requires that a system that exceeds the lead action level after corrosion control treatment has been installed must replace 1/7 of its lead service lines which the system owns each year for seven years, or until tap water monitoring indicates that its 90th percentile lead level is

below 0.015 mg/L. DC WASA is formulating a plan to identify, prioritize, and replace 1600 lead service lines in calendar year.

Prior to this AL exceedance, the corrosion control treatment used by the Washington Aqueduct for the District's drinking water seemed to be effective. However, in the last two years, there have been two major events which may have caused the relatively sudden increase in lead levels in the District's drinking water system. The first is the extended drought condition which has lowered water quality in the Potomac River which is the sole source of the District's drinking water. Source water alkalinity has increased which has made it difficult for the Aqueduct to elevate the pH of the finished drinking to the desired level for optimum corrosion control treatment. The Aqueduct adds lime to elevate the pH, but the amount of lime added depends upon the alkalinity of the finished water. Too much lime results in cloudiness in the finished drinking water caused by the precipitation of calcium carbonate.

The second event was the conversion from free chlorine to chloramines as the secondary disinfectant applied by the Aqueduct to the finished water. The conversion was made to reduce the formation of trihalomethanes in the Aqueduct's customers' distribution systems. However, it is suspected that the ability of chloramines to deter biofilm formation within distribution system pipes may also leave the pipe interiors more susceptible to corrosion.

In addition to DC WASA's compliance activities, EPA will work with the Aqueduct to revisit corrosion control treatment options. **Contact George Rizzo, 814-5781**

[Recess.]

Chairman TOM DAVIS. The committee will come back into order. We have our second panel now, some of our science experts.

We have Erik Olson, senior attorney, the Natural Resources Defense Council; Professor Ellen Silbergeld, who is from the Johns Hopkins Bloomberg School of Public Health; and Professor Marc Edwards, Virginia Polytechnic Institute and State University.

If you'll rise with me and raise your hands, I'll swear you in.

[Witnesses sworn.]

Chairman TOM DAVIS. Thank you. I think the questioning here will be a little easier than it was on the last panel, but we really are excited about your testimony here. I've read it coming in here today. I think it adds a lot to the scientific basis on this, and I just appreciate your bearing with us through the first panel.

Mr. Olson, why don't we start with you and move straight down. You know the rules of trying to keep it within 5 minutes. Your entire statement is in the record. Thanks for being with us.

STATEMENTS OF ERIK OLSON, SENIOR ATTORNEY, NATURAL RESOURCES DEFENSE COUNCIL; PROFESSOR ELLEN SILBERGELD, JOHN HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH; AND PROFESSOR MARC EDWARDS, VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Mr. OLSON. Can you hear me? I am Erik Olson. I'm a senior attorney with the Natural Resources Defense Council. I'm glad that the committee is holding this hearing and thank the chairman for scheduling this important discussion.

First, I want to say that the lead crisis in D.C. really is a wake-up call nationally. We don't think that this is just a problem in Washington. We believe that although we know about the extent of the problem only in D.C., there are probably other locations where there are serious issues.

We ought to have the best water quality, the best drinking water system in the world here in the Nation's Capital, and instead we have one of the worst in the Nation, as we just heard from previous witnesses. This is a serious public health issue, which Dr. Silbergeld, I believe, will discuss, but I think what I want to focus on are the serious flaws that this whole process lays bare with EPA, with WASA and with the Army Corps.

First of all, there are clear holes in EPA's rules, as have been identified in the previous questioning. What wasn't discussed in detail is the fact that the rules that govern what can go into our faucets and fixtures seem to have a problem. We are still, it appears, installing some fixtures, faucets and so on that still leach lead. That is an issue that needs to be addressed and discussed. In addition, the lack of knowledge, testing and enforcement of the school testing requirements of the Lead Contamination Control Act are very troubling, and we are extremely troubled by the lack of enforcement of that.

The EPA oversight obviously, as the previous panel has shown, was inadequate, and I don't think it's worth going into a lot of detail, but we think it is absolutely incumbent upon EPA to use its enforcement authority, its 1431 emergency authority in this case. If you can't do it in this case, where EPA witnesses admitted that

this is the worst they know about in the country, when in the world are you going to use this authority? This is why the authority was written into the law by Congress.

In addition, we think it's important to note that—take a look at the trend in EPA enforcement in this program over the last 3 years; it has been steadily declining over the last 3 years. We attached to our testimony every measurement of enforcement of this drinking water act over the last 3 years. It's been dropping stepwise. It's very concerning, and we think, again, this tells of a national problem.

With respect to the D.C. WASA, it's absolutely critical that this invalidation of samples issue be evaluated. And also, with respect to these filters, the filters that are being offered are simply pitchers that people can put on their kitchen counter, but these filters are not going to be a long-term solution. First of all, they expire after a month or two. EPA has regulations for a point-of-use device like this. Is EPA going to insist that those regulations be tracked?

For example, what happens after 2 months in a day care center that has high levels of lead? Are there going to be automatic maintenance and followup on these? Are they going to wait until Brita donates additional filters? We think it's incumbent upon EPA to mandate in its enforcement orders that WASA install these filters professionally instead of using these pitchers and also that there be followup.

In addition, with respect to the school testing in the District, it was completely bogus. They tested 150 schools, 750 taps, but they ran the water for 10 minutes before they tested them. It's clear that was intended not to find a problem, and they are refusing to retest. Why is that? We think they are not retesting the schools and day care centers because they suspect there might be a problem.

I think it's important for this body to insist upon WASA retesting the schools in the District, and we think that ought to be expanded to everywhere that the Corps of Engineers water goes.

Finally, with respect to the Corps of Engineers, it's important that the corrosion control and the old-fashioned treatment that the Corps still uses—which is World War I-era treatment, I want to emphasize; they are not using modern treatment. If you got to modern treatment, we could largely solve this problem.

It's key that this body fund response in D.C., as necessary, that there be aggressive oversight of EPA, that there be water infrastructure funding and that this entire process be opened up.

We are very concerned that all of these discussions that we've heard about this morning are all cutting the public out in violation of open government laws in the District. None of these meetings that are being held are—of the advisory groups that are discussing this are being opened to the public. So we are very concerned about the lack of openness.

And finally, with regard to the emergency enforcement action, it's just absolutely key that action be aggressive and across the board and not just a short-term fix. Thank you.

Chairman TOM DAVIS. Thank you very much.

[The prepared statement of Mr. Olson follows:]

NATURAL RESOURCES DEFENSE COUNCIL

STATEMENT OF
ERIK D. OLSON
SENIOR ATTORNEY
NATURAL RESOURCES DEFENSE COUNCIL

BEFORE THE
COMMITTEE ON GOVERNMENT REFORM
OF THE
UNITED STATES HOUSE OF REPRESENTATIVES

REGARDING
LEAD CONTAMINATION OF THE DISTRICT OF COLUMBIA WATER SUPPLY AND THE RESPONSIBILITIES OF THE D.C. WATER AND SEWER AUTHORITY, U.S. ARMY CORPS OF ENGINEERS' WASHINGTON AQUEDUCT, AND THE U.S. ENVIRONMENTAL PROTECTION AGENCY

MARCH 5, 2004

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STATEMENT OF
ERIK D. OLSON
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BEFORE THE
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UNITED STATES HOUSE OF REPRESENTATIVES

REGARDING
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MARCH 5, 2004

SUMMARY

The local drinking water lead crisis poses serious public health risks to thousands of residents of the national capital area, and casts a dark shadow of doubt over the ability, resources, or will of federal and local officials to fulfill their duty to protect our health. The U.S. Environmental Protection Agency (EPA) has the primary responsibility for protecting drinking water only in Washington D.C., Wyoming, and a few U.S. territories. EPA has failed to fulfill its obligation to aggressively oversee the safety of D.C.'s water supply, to ensure that the public is fully apprised of the health threats posed by our drinking water, and to enforce the law. This raises important questions about the adequacy of EPA's drinking water program not only for the Nation's Capital, but also for the whole nation. The U.S. Army Corps of Engineers' Washington Aqueduct Division (the Corps) has failed to treat the water it delivers to D.C. and neighboring Northern Virginia communities sufficiently to assure that the water is not corrosive, in order to reduce lead contamination. The D.C. Water and Sewer Authority (WASA) has failed to act promptly or adequately on the lead contamination crisis, and has repeatedly confused and mislead the public about the lead problem. To date, the local and federal response has been little short of an embarrassment. The nation's capital's water supply should be the best in the world, an international model. Instead, it is among the worst big city supplies in the nation.

However, it should not be assumed that Washington is the only city in the U.S. affected by lead or other important tap water problems. We are now learning of lead problems in Northern Virginia, and there are several other cities have struggled with lead contamination in recent years, including Seattle, communities in greater Boston, St. Paul, Minnesota, Bangor, Maine, Madison, Wisconsin, Ridgewood and Newark, New Jersey, Oneida, New York, Port St. Lucie Florida, and many others. However, EPA maintains no accurate up-to-date national information on this issue. Some of these cities will assert that they are now in compliance with EPA's lead action level despite recent documented problems, but EPA has done little to aggressively ensure that this is correct. School systems in many cities across the country including in Seattle, Boston, Baltimore, Philadelphia, and many others have found serious lead contamination problems, but often have been slow to inform parents and resolve the problem. Many other school systems have entirely failed to comply with the Lead Contamination Control Act of 1988's mandate to test school water for lead and replace coolers that serve lead-contaminated water. EPA and many states have done a poor job of assuring that the EPA lead rule, and the school testing and cooler programs are fully implemented. National drinking water databases that Congress and EPA rules mandate are incomplete and out of date. EPA has acknowledged that there are major problems with state reporting of all violations and specific lead levels to EPA, but has failed to crack down on states that are not complying with federal reporting rules, making effective EPA oversight and enforcement impossible. Moreover, the Washington crisis and experience in other cities highlight that the EPA lead rule and public education requirements are almost designed to be difficult to enforce.

Below, we summarize some key problems with the response to the lead crisis, and the actions that need to be taken to resolve the problem locally and to avoid possible repetition of the problem nationally:

EPA. The EPA bears a special responsibility for addressing the D.C. water crisis, since EPA has primary responsibility for drinking water protection only in Washington, D.C. and Wyoming. EPA must take emergency enforcement action against WASA and the Corps, as detailed below. This emergency order should not only mandate immediate actions to deal in the short-term with the lead crisis, but should also require a comprehensive top-to-bottom third party review of both WASA and Corps operations. EPA has failed to ensure prompt and accurate public education and reporting on lead problems, and there are substantial questions about whether EPA adequately oversaw WASA's lead monitoring and sample invalidations. EPA failed to promptly and adequately review, or to insist upon the updating the Corps' corrosion control program. It is unclear whether EPA insisted upon an adequate and accurate materials survey, and EPA allowed WASA to avoid lead service line replacement by taking advantage of a regulatory loophole. EPA has taken no action to force WASA to redo its manifestly invalid and misleading school testing, nor has EPA mandated testing of day care centers or private schools. The EPA lead rule itself, which is drafted in a way that makes it extremely difficult to enforce, needs to be substantially strengthened. In addition, EPA's data reporting systems are woefully inadequate, to the point

that EPA management cannot accurately and timely answer simple questions such as "which public water systems are above the lead action level and which are replacing lead service lines?" EPA also has done little to ensure that school testing for lead has been carried out nationally, perhaps in part due to a court ruling casting doubt on the program. EPA's inspection and enforcement program for drinking water has always been weak, but has gotten demonstrably worse during the Bush Administration, as is shown in graphs a the end of this testimony.

Army Corps of Engineers. The Corps has failed to ensure that its water is adequately treated to reduce its corrosivity and to thereby reduce lead levels in Washington and the Northern Virginia suburbs that it serves. The Corps has repeatedly responded to water quality problems by adopting the cheapest and often least effective band-aid solutions. Instead of using orthophosphate or other sophisticated corrosion inhibiters as recommended by some consultants, the Corps chose to simply adjust water pH, a cheaper and apparently less effective alternative. Instead of moving towards advanced treatment such as granular activated carbon filters and UV light or ozone disinfection to reduce cancer-causing (and possibly miscarriage and birth defect-inducing) disinfection byproducts, and to more effectively remove the dangerous parasite *Cryptosporidium* and other contaminants, the Corps opted for the cheapest and least effective choice. It simply added ammonia to its chlorine to make chloramines. The switch to chloramines did slightly reduce chlorination byproduct levels, but also appears to have increased corrosivity of the water and therefore increased lead problems.

WASA. WASA's response to the lead crisis has been slow, plagued by misleading statements to the public and even to senior D.C. officials, and often characterized by missteps and at best grudging compliance with EPA rules. Whether it is the alleged firing of a WASA employee for reporting lead problems to EPA, or the failure to notify customers with high lead levels for many months after samples were taken, or the failure to effectively notify the Mayor, City Council, and all city residents of the extensive and serious lead problem until the Washington Post broke the story, WASA has a lot to answer for. Its conflicting advice to customers (such as a February 9 letter to all customers telling them to flush their water for 15-30 seconds, followed by a public announcement a few days later to flush lead lines for 10 minutes, followed a few days later by a recommendation that pregnant women and children under six served by lead service lines should use a filter) has confused and justifiably outraged citizens. WASA's invalid and misleading testing of city schools, in which virtually all samples were taken after water was flushed for 10 minutes (with the likely effect of reducing or eliminating lead levels), necessitates a re-conducting of a valid school and day care testing program. In addition, it appears that WASA's *partial* lead service line replacement program may be making matters worse, increasing lead levels in some homes' water. Since local and federal authorities have approved and encouraged the use of lead service lines in D.C. for over 100 years, we believe that WASA should fully remove all of the lead service lines at its expense (with federal assistance), instead of stopping at the property line. A comprehensive third-party public review of WASA's lead program and all water quality operations also is desperately needed.

Congress. We urge Congress to help D.C. and EPA to fund the response to the lead crisis, including lead service line replacement and upgrades to the D.C. and Corps water infrastructure. Congress also should respond to the national water infrastructure problem through national legislation and increased appropriations. In addition, Congress should vigorously oversee EPA's drinking water program, including its national implementation of the lead rule and its enforcement and data collection programs. Members of this Committee should urge their colleagues on the Appropriations Committee to increase funding for EPA drinking water programs, and particularly for drinking water enforcement. Finally, we urge Congress to insist that EPA take emergency enforcement action against WASA and the Corps, as discussed below.

Introduction

Thank you for the opportunity to testify. I am Erik D. Olson, a Senior Attorney with the Natural Resources Defense Council (NRDC), a national non-profit public interest organization dedicated to protecting public health and the environment, with over 500,000 members. I also am Chair of the Campaign for Safe and Affordable Drinking Water, an alliance of over 300 medical, public health, nursing, consumer, environmental, and other groups working to improve drinking water protection, and serve on the steering committee of a new organization called Lead Emergency Action for the District (LEAD), a coalition of local and national civic groups, environmental, consumer, medical, and other organizations and citizens urging a stronger public response to the D.C. lead crisis. I testify today only on behalf of NRDC.

EPA's Responsibilities

EPA has known, at least since the mid-1990's, that lead contamination of tap water is a significant issue in Washington, and that the public was ill-informed about the problem. In 1995-1996, in response to a Freedom of Information Act request, NRDC learned that many homes across the city had lead levels well in excess of the EPA Action Level, and that those homeowners had not been informed of the contamination. The Washington Post ran a story about the issue in April 1996. Meanwhile, the Corps' filed its corrosion control plan with EPA, and EPA substantially delayed in its approval, well beyond the legal deadline. Finally, EPA apparently simply accepted the Corps' plan to use only pH adjustment, rather than requiring the Corps to further study or use orthophosphate or other more sophisticated corrosion inhibiters recommended by some consultants. When the Corps later switched to chloramines as a disinfectant, EPA made the serious mistake of not insisting upon a full review of the corrosion control plan in light of the apparently more corrosive disinfectant.

Even when the lead Action Level was exceeded in Washington in 2001, EPA required no changes in corrosion control, went along with WASA's plan to replace only a small number of lead service lines, and did not insist that WASA conduct an effective public education program. There also are substantial unresolved questions about whether EPA allowed WASA to "invalidate" lead samples and avoid an exceedence of the Action Level, as alleged by a former WASA employee who was reportedly fired for informing EPA of the lead problem. Additionally, EPA has never challenged the adequacy of WASA's water quality reports sent to all consumers in June 2003 boldly proclaiming that "YOUR DRINKING WATER IS SAFE," despite the exceedence of the lead Action Level. EPA still has not challenged WASA on its misleading school testing effort that ran water for 10 minutes before checking for lead.

Moreover, while EPA enforcement of the Safe Drinking Water Act (SDWA) has never been strong, this testimony documents that nationally, it has substantially dropped off since President Bush took office (see Figures at the end of this testimony). EPA's drinking water inspections, administrative penalty orders, administrative penalties, and other measures of enforcement activity generally have taken a substantial downturn in the past three years. We understand there is only one EPA staffer in EPA's Washington enforcement office dedicated to drinking water enforcement (though there are pieces of a few others who spend small amounts of time on drinking water enforcement), and that the dedicate drinking water enforcement staffing in the EPA's regions is small and dwindling. This enforcement downturn may have contributed to the lack of action in this case, compared to a far more

vigorous EPA enforcement response to previous D.C. water crises in 1993-94 and 1995-96. There is a serious need for a major infusion of resources and a will to enforce in EPA's drinking water and enforcement programs.

The only solution to the D.C. water crisis is for EPA to initiate a full civil and criminal investigation, and to immediately issue emergency administrative orders to WASA and the Corps. The orders should mandate that they address the multitude of problems with their response to the lead crisis and other water quality problems, *including deadlines* for:

(1) expedited, valid testing of all schools and day care centers;
(2) expanded testing of homes beyond those with lead service lines;
(3) reissued accurate, understandable notices to consumers of lead levels, health risks, and options to avoid lead;
(4) professional installation *and maintenance* of certified filters for homes with lead service lines or high lead levels in their water, and that have young children, pregnant women, women who expect they may become pregnant, and other high risk individuals;
(5) an aggressive, honest, ongoing public education campaign developed with public input;
(6) a comprehensive third-party review of all available records and archives to determine whether the D.C. materials survey correctly identifies all locations where lead components were used;
(7) an expedited third-party review of the Corps' corrosion control and disinfection byproduct control strategy, with mandatory implementation of solutions by specified dates certain; and
(8) a top-to-bottom third party expert review of WASA and the Corps' water quality, source water, and overall performance, including a detailed review of their implementation of past consultant recommendations, Comprehensive Performance Evaluations, and sanitary surveys, and recommendations for long-term compliance with current and upcoming rules and water quality objectives. The review should seek public input and should be published.

(See LEAD coalition recommendations below for a more detailed discussion of the terms of possible orders). Finally, EPA must overhaul its lead rule, and its overall and substantially better fund its drinking water and enforcement program's oversight, sampling, data collection, and legal enforcement to ensure that this or other similar problems are not repeated in other cities around the country.

The Army Corps of Engineers' Responsibilities

The Corps has repeatedly opted for the cheapest, easiest way out of water quality problems, even if the "solution" is manifestly inadequate. Thus, instead of following consultants' advice to consider aggressive and sophisticated corrosion inhibiters such as orthophosphates to reduce lead problems, the Corps chose merely to adjust pH. Instead of addressing the underlying problem creating the high chlorination byproduct contamination of city water by installing advanced treatment such as activated carbon and ozone or UV disinfection, the Corps opted for a cheap "band-aid" solution of using chloramines alone, apparently exacerbating the corrosion problem with our water. As noted above, EPA should immediately issue an emergency order to the Corps requiring: (1) a comprehensive public third party expert review of the Corps' corrosion control and water treatment problems; (2) deadlines for completion of the review and implementation of recommend solutions; and (3) a longer-term top-to-bottom third party review, with public input, of the Corps' water quality and treatment.

D.C. Water and Sewer Authority's (WASA) Responsibilities

WASA has bungled its response to the D.C lead problem. WASA's public education and public notice efforts have been conflicting, confusing, misleading, and manifestly woefully inadequate. The direct notices provided to customers whose water was tested and confirmed to be highly contaminated was misleading and failed to provide any sense of health risk or urgency. The WASA water quality reports issued to the public proclaiming that "YOUR DRINKING WATER IS SAFE," despite evidence to the contrary, was highly misleading, as were a variety of other WASA public communications. WASA's changing advice on how long and whether to flush tap water, and whether filters are necessary, has confused the public.

WASA's program testing about 750 samples from over 150 city schools' fountains and faucets was fundamentally flawed and either completely inept or intentionally misleading. WASA admits that contrary to standard EPA regulatory protocol and standard scientific practice, they ran the water for 10 minutes before taking school samples, thereby likely substantially reducing lead levels in the samples. No child runs water for 10 minutes before drinking it. WASA's press conference portraying the results as demonstrating that there is no lead problem in D.C. schools was highly misleading and likely false.

In addition, there are serious unanswered questions about when WASA first learned of the lead problem, whether WASA "invalidated" lead samples to avoid exceeding the Action Level, and whether WASA fired an employee allegedly for notifying EPA of water quality problems (as has been found by a U.S. Department of Labor whistleblower review). It is also unclear whether the city's materials survey (intended to identify lead components in the system) adequately documents where lead service lines and high risk homes are located. The WASA lead sampling plan and monitoring program clearly are inadequate, since to date they have not sought to document the extent of the lead problem in homes not served by lead service lines.

WASA's lead service line replacement program is insufficiently aggressive and will not promptly resolve the city's lead problems. In addition to the slow pace of replacement (at WASA's current rate, it will take about 15 years to complete), it also is becoming apparent that *partial* lead service line replacement (leaving the lead line on the homeowner's property in place) may actually make lead problems worse. Partial service line replacement can exacerbate lead problems by shaking loose lead particles during and after the replacement process, and by creating galvanic corrosion (similar to a battery) caused when two pipes made of different metal are connected.

A long history of problems with the operation and maintenance of the D.C. water distribution system, including past city-wide boil water alerts during the microbial crises in 1993-94 and 1995-96, and WASA's inability or unwillingness to candidly inform customers and apparently even senior city officials about water quality problems makes clear the need for EPA to issue an emergency order mandating a comprehensive top-to-bottom third party expert review of WASA's water quality and operations, with public input and public release of the findings, and a schedule for implementation of the recommendations.

History of Recent Lead Crisis in D.C.

On Saturday January 31, 2004, residents of the Nation's Capitol picked up their morning papers and were stunned to learn that thousands of homes' drinking water in the District was seriously contaminated with lead. Officials at the D.C. Water and Sewer Authority (WASA) and at the U.S. Environmental Protection Agency (EPA) had known about the lead problem for over a year, and probably longer, but had failed to effectively notify the public about the problem. The Mayor, City Council, Members of Congress, and the general public were caught by surprise that over 4,000 of 6,000 homes whose water WASA tested was contaminated with lead at levels above EPA's action level—the safety level at which federal rules require prompt action to reduce lead levels. There has been over a month of front-page stories, saturation TV and radio coverage, hostile City Council hearings, public outrage, and repeated (albeit often conflicting) WASA public statements that there was no serious health threat. Finally, WASA recommended on February 25 that pregnant women and children under age six whose homes were served by lead service lines should not drink city water, fueling further public concern, confusion, and outrage that WASA and EPA had known about the health threat for so long and never previously told pregnant women and parents of young children not to drink the water.

WASA also held a press conference in late February to announce that school drinking water was safe, based upon testing of over 750 fountains and faucets in D.C. schools. It then came out that the results were seriously misleading because in almost all cases, WASA flushed the water lines for 10 minutes, likely removing most lead from the water, contrary to EPA rules and all scientific protocols for lead testing. No child stands at a fountain flushing water for 10 minutes before taking a drink. WASA has refused to retest D.C. school drinking water, or to comprehensively test day care centers, posing a serious health risk to D.C. school and preschool children.

Now we are learning that it appears that similar problems may be plaguing Northern Virginia communities that also receive their water from the U.S. Army Corps of Engineers' Washington Aqueduct Division (the Corps). The Corps changed its disinfection practice to use chloramines in 2000, a switch many experts believe may account for increased corrosivity of the water and therefore more lead leaching into tap water. Chloramines are a "band-aid" that modestly reduce cancer-causing chlorination byproducts, but only a switch to modern water treatment technologies such as granular activated carbon plus UV light or ozone disinfection will actually solve both the chlorination byproduct problem.

The February 25 "don't drink the water" advice, though necessary, is woefully inadequate. Citizens are infuriated that they have been mislead and given conflicting advice. District leaders announced, as this scandal erupted in early February, that they would name an "independent" blue ribbon panel to investigate. However, this was followed days later by an announcement of a panel consisting entirely of WASA and other District government officials, with no independent experts and no citizens, environmentalists, or consumer representatives. The District government's retreat from its promise that there would be an independent review showed a lack of commitment to swiftly resolve this serious health problem or to get to the bottom of why WASA continues to fail in its duty to protect the public.

The decisions to approve the use of lead service lines were made with the explicit approval and oversight of federal officials, who were overseeing the construction of the city's water lines and supply. There had been a vigorous public debate about the safety of lead service lines stretching back

to the 1890s, yet federal officials who ran the city supply decided to use lead lines. Thus, the federal government bears some culpability for the problem.

LEAD Coalition's Recommendations

The Lead Emergency Action for the District (LEAD), a coalition of local and national health, environmental, and other citizen organizations of which NRDC is a member, recommends the following actions:

1. **The U.S. Environmental Protection Agency (EPA) has the responsibility to immediately take enforcement action against WASA to ensure our health is protected, and should initiate a full criminal and civil enforcement investigation.**

The EPA has primary responsibility for overseeing the safety of the District's drinking water supply. Unlike its vigorous actions to resolve microbiological threats a decade ago, the agency has shirked its responsibility in response to the recent lead problem. The EPA should immediately initiate an enforcement action under its emergency order authority (which allows the EPA to enforce when there is an imminent health threat, requiring no finding of a violation of law), and should initiate a parallel criminal and civil enforcement investigation. The EPA order should mandate several specific actions, *including deadlines* for:

1) **Expedited, valid testing of all schools and day care centers**, both first draw and flush samples.
2) **Expanded testing of homes beyond those with lead service lines**. WASA should make free water lead tests permanent and aggressively inform the public that it has extended eligibility for free lead in water testing to all D.C. residents. (This is what the New York City Department of Environmental Protection has been doing for more than 10 years.) Notice of these free lead tests should be drafted in consultation with EPA and the public, and should note the health implications of elevated lead levels in water and the threat from lead paint in D.C.
3) **Reissued accurate, understandable notices to consumers** of lead levels, health risks, and options to avoid lead. WASA should be required to immediately (within 1 week) notify all 23,000 households that have lead service lines in writing that that they have lead service lines, what the risks are, and arrange for free lead testing of their water. Notices also should be sent to other customers who are not believed to have lead service lines noting that there still may be a risk of lead contamination, and offering to arrange for free lead testing.
4) **Professional installation *and maintenance* of certified filters** for homes with lead service lines or high lead levels in their water, and that have young children, pregnant women, women who expect they may become pregnant, and other high risk individuals.
5) **An aggressive, honest, ongoing public education campaign** developed with public input. This should include several specific requirements, such as:
    a. WASA should send all D.C. residents a *detailed* city-wide map of all areas with known or suspected lead service lines with accompanying health and other explanations.
    b. WASA must acknowledge the public's right to know and issue a city-wide map of lead levels detected on a detailed map, and should provide *real time* monitoring results for lead and all contaminants found in its water.

c. WASA must notify any home with a lead service line that has been found to have excessive lead in an appropriate water test that it is eligible for free lead service line replacement, and the schedule for replacement. The notice should also note whether WASA is responsible for only part of the service line replacement or full service line replacement under D.C. law.
d. EPA and WASA must issue notices that publicly recommend that those pregnant women, or parents of young children, with lead service lines or whose water lead levels are in excess of EPA's Action Level (or some other reasonable safety level), should obtain blood screening for lead for their children. This is not an emergency that would require going to the emergency room, but it is a matter of importance, and blood tests for lead levels should be provided by the D.C. Department of Health.

6) **A comprehensive third-party review of all available records and archives to determine whether the D.C. materials survey** correctly identifies all locations where lead components were used;
7) **An expedited third-party review of the Corps' corrosion control and disinfection byproduct control strategy**, with mandatory implementation of solutions by specified dates certain; and
8) **A top-to-bottom third party expert review of WASA and the Corps' water quality, source water, and overall performance,** including a detailed review of their implementation of past consultant recommendations, Comprehensive Performance Evaluations, and sanitary surveys, and recommendations for long-term compliance with current and upcoming rules and water quality objectives. The review should seek public input and should be published.

2. EPA should immediately take enforcement action against the Army Corps of Engineers' Washington Aqueduct and order it to aggressively treat the water to reduce lead leaching.

The EPA's 1991 lead and copper regulations require the Washington Aqueduct to treat our water in order to reduce its corrosivity; less corrosive water should mean less lead leaching from pipes. While the Corps and WASA do have a corrosion control program (albeit one that reportedly was reviewed by the EPA far later than envisioned by the 1991 rules), it is obvious that it must be critically examined and improved. Recent changes in water treatment at the Washington Aqueduct (apparently made after the corrosion control plan went into effect), aimed at reducing disinfection byproducts, may have altered the chemistry of the city's water. An urgent independent review of the corrosion control plan is warranted, with EPA-ordered steps to implement recommended actions. Deadlines should be established for completion of the review and implementation of its recommendations, and the results should be made public as soon as they are completed. When WASA was constituted, it entered into a governance agreement with the city of Falls Church and Arlington County over Washington Aqueduct, with oversight over expenses and actions. WASA and other customers should long ago have insisted upon improvements in the Washington Aqueduct's corrosion control program.

3. WASA must re-conduct its testing of District school water to be sure that *all drinking water fountains and all faucets used for consumption in District schools and day care centers* are tested—both *first draw* and flushed samples—within two weeks.

WASA's recent water test results were highly misleading because more than 97 percent of the samples taken were from faucets and fountains flushed for 10 minutes. Since no student flushes a fountain for

10 minutes before taking a drink, flushing water for a test sample would create misleading samples and test results. (Flushing often will reduce or eliminate lead levels in large buildings.) Since infants and young children are most vulnerable to lead poisoning, schools and day care centers should be top priorities for testing.

4. EPA and Congress should help WASA and the D.C. government fund home treatment units or bottled water for pregnant women and infants under age 6 in households that have lead service lines *or* lead in the drinking water at levels above the EPA action level.

There are likely thousands of pregnant women and young children under the age of 6 who are drinking tap water that contains lead at levels higher than 15 parts per billion, EPA's action level. These people need a safe alternative water supply until the problem has been resolved. The D.C. government, EPA and Congress should fund alternative water supplies for high-risk water drinkers. Bottled water is not necessarily any safer than tap water unless it is independently tested and confirmed to be pure, and many filters are not independently certified to remove the levels of lead found in many D.C. homes' water. Therefore, EPA should assist residents by assuring that any alternative water supply (such as bottled water) is indeed free of lead and other harmful contaminants, or that a filter is independently certified (see www.nsf.org) to take care of lead. It should be noted that NSF certifies only that lead levels up to 150 ppb will be reduced to below 10 ppb; there is no guarantee for reducing levels above 150 ppb. Finally, it is critical that WASA and other officials involved ensure that there is a follow-up program for maintenance of filters, since poorly maintained filters can fail to remove lead or even make contamination worse.

5. WASA should expedite replacement of lead service lines, and the City Council should review policies on replacement of the homeowner's portion of the line.

Under EPA's lead and copper rule, WASA reportedly has begun to implement its obligation to replace 7 percent of the District's lead service lines (or to test and clear homes served by lead service lines as containing less than 15 ppb lead in their water) each year. At this pace it will take nearly 15 years—until about 2018—for WASA to replace all the city's lead service lines. In the meantime, thousands of pregnant women, infants and children could be consuming water with excessive lead levels. We strongly urge that the lead service line replacement program be aggressively expedited. A schedule should be published, with objective criteria for which lines will be replaced first (presumably based primarily upon replacement of those lines posing the greatest public health risk first). Federal and city general funds should be set aside for this program to augment promised rate increases on our water bills. WASA customers should not foot the entire bill, since the decisions to approve the use of lead service lines were made with the explicit approval and oversight of federal officials who were overseeing the construction of the city's water lines and supply. There was a vigorous public debate about the safety of lead service lines stretching back to the 1890s, yet federal officials who ran the city supply decided to use lead lines. District officials also should consider using the city's multimillion dollar rainy-day fund to help pay for service line replacements.

In addition, the City Council should review WASA's and the city's policy about lead service line replacement for the portions of the line that are supposedly owned by homeowners. Evidence is mounting that partial lead service line replacement often will not solve the problem, and actually can make lead levels worse by shaking loose lead in the pipes and causing galvanic corrosion that may exacerbate lead problems.

Under recent EPA rule changes, it is apparently up to the City Council to determine how much of the service line should be replaced by WASA. In 1991, EPA originally required full lead service line replacement unless the water utility could prove that it did not control part of the line, in which case it was to replace only that portion that the utility controlled. After being sued successfully by a water industry group, the EPA changed the rules to provide that it is largely a question of local law what portion of the lead service line is the responsibility of the water utility. We believe that it is only fair that since many of the lead service lines were installed from the 1890s through the 1940s under the direction, approval and control of the District and federal officials, those authorities should be responsible for replacing them, not homeowners. The cost to homeowners of their portion of lead service line replacement could be thousands of dollars, but it is far more efficient and cost-effective to replace the entire service line at once, rather than digging up yards twice. This is a question that deserves a full public airing by the City Council.

6. The City Council should create a permanent citizen water board for water to oversee WASA and the Washington Aqueduct, to address longstanding problems with D.C.'s water supply.

In 1996, the Natural Resources Defense Council (NRDC), Clean Water Action (CWA), and the DC Area Water Consumers Organized for Protection (DC Water COPs) issued a report, based in large part on city and federal records obtained under the Freedom of Information Act. That report found serious ongoing problems with the District's water, and identified likely problems that could occur in the future. Among the current and future problems noted were lead contamination, bacteria and parasites, cloudiness (turbidity) in the water – which may indicate poor filtration and can interfere with disinfection – and disinfection byproducts that cause cancer and may cause birth defects and miscarriages. The report also noted that the Washington Aqueduct's water treatment plants need a major infusion of funds to modernize and upgrade treatment, and that the District has ancient and deteriorating water pipes leading to water main breaks, regrowth of bacteria, and lead problems. Those pipes must be replaced. In addition, the WASA-operated sewage collection and treatment systems have serious inadequacies, including major problems whenever stormwater runoff overloads the treatment plant's capacity, causing raw sewage to flow into the Anacostia and Potomac rivers.

In the wake of the D.C. citywide boil-water alerts in 1993 and 1996 due to turbidity and bacteria problems, and EPA's enforcement orders issued thereafter, comprehensive sanitary surveys and engineering reviews by outside contractors found a series of serious problems with our water treatment and distribution system. These reviews recommended hundreds of millions of dollars in improvements in the city's water supply system.

While the city has addressed some of the most pressing problems, it has not made many of the important investments needed to repair local water infrastructure. We strongly recommend that the City Council establish a citizen water board to oversee the city's water supply and sewer system. The board should oversee not only steps to improve our drinking water system, but also WASA's storm water and sewer obligations, because of the overall competition for water infrastructure dollars and need to focus on whole watershed and "sewer shed" solutions. This board—like those created by some states to oversee electric and other utilities—should be funded with a small surcharge on water and sewer bills, and should be wholly independent of WASA and the Washington Aqueduct. It should include independent engineering and public health experts and citizen activists interested in drinking water, and should issue an annual progress report on WASA's and the Washington Aqueduct's performance, progress and problems.

7. The City Council must improve its oversight of WASA.

The District's City Council is responsible for overseeing WASA's day-to-day activities, and has failed to do its job over recent years to make sure that WASA is carrying out its responsibilities to deliver safe drinking water and to safely collect and fully treat city sewage. More aggressive City Council oversight is needed to avoid continued problems with WASA.

8. The mayor should make tap water and all environmental protection a high priority.

The mayor should make drinking water safety, sewage collection and treatment and environmental protection a high priority. The mayor bears some responsibility for ensuring that WASA is doing its job. He has many ways to influence WASA's board and daily operations, and should insist on regular briefings and updates on how the city is fulfilling its obligations to provide these most basic city services.

9. Consumers, health, and citizens groups should be on the blue ribbon commission, and should recommend people to serve on the panel.

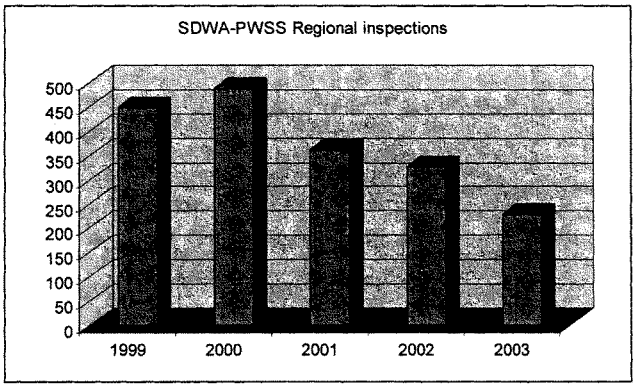
The announced "independent" panel to review WASA's embarrassing performance in addressing the lead problem has instead morphed into an internal review panel of city officials, including two of the WASA officials who so obviously have failed to do their jobs. In order to avoid a panel that merely papers over the problems and whitewashes the lead crisis, LEAD is calling upon city officials to name independent experts, consumers, citizen groups and environmentalists to the panel.

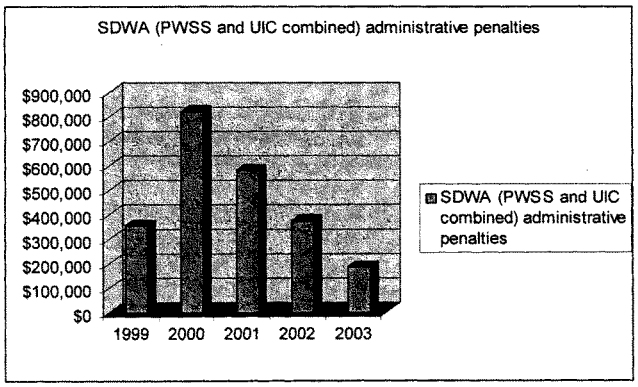
10. The EPA, CDC, the D.C. Dept of Health and the City Council should establish a joint task force with citizen participation, to evaluate the extent of lead poisoning from all sources in the District, and its environmental justice implications, particularly for low-income African-American and Latino households.

According to expert estimates, the District has widespread lead poisoning, affecting perhaps tens of thousands of District children. Because of the city's demographic and economic realities, most of these children are African American and Latino. The District and federal officials should establish a joint task force, with citizens and medical experts, to evaluate the extent of the problem and its environmental justice implications, and to recommend actions to remedy it.

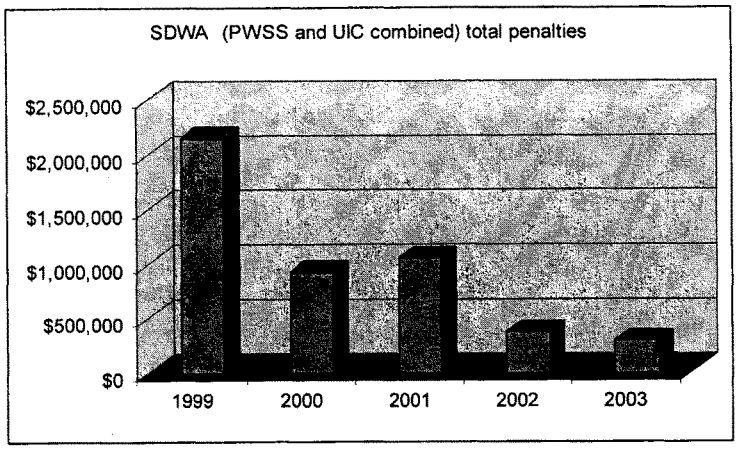
RECENT TRENDS IN EPA DRINKING WATER ENFORCEMENT

Source: EPA Data, 2004[1]





1


SDWA (PWSS and UIC combined) total penalties
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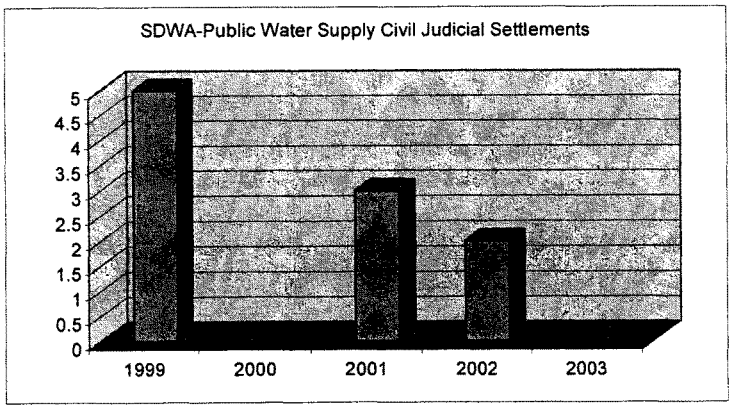
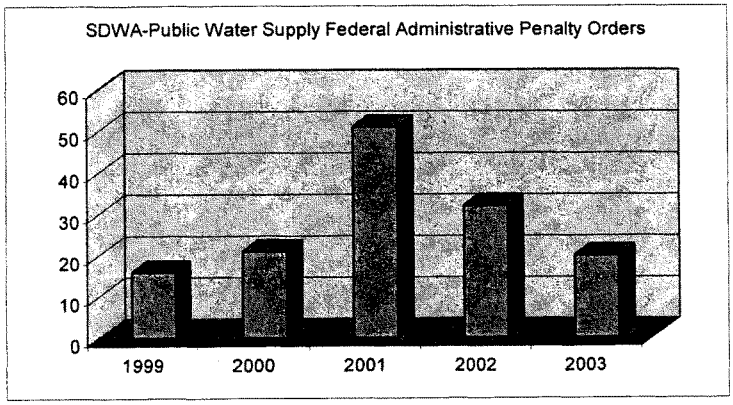
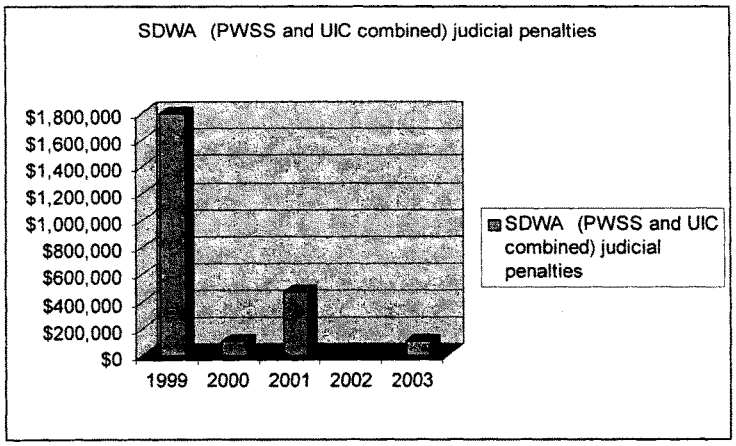
$2,000,000
$1,500,000
$1,000,000
$500,000
$0
1999
2000
2001
2002
2003


SDWA-Public Water Supply Civil Judicial Settlements
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1999
2000
2001
2002
2003


SDWA-Public Water Supply Federal Administrative Penalty Orders
60
50
40
30
20
10
0
1999
2000
2001
2002
2003


SDWA (PWSS and UIC combined) judicial penalties
$1,800,000
$1,600,000
$1,400,000
$1,200,000
$1,000,000
$800,000
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$400,000
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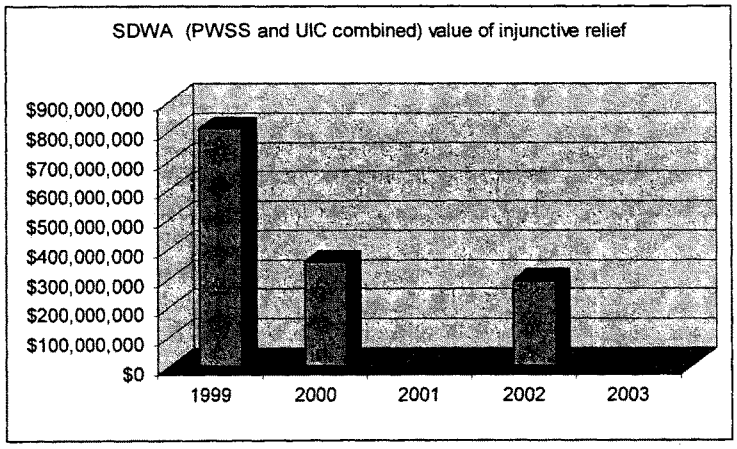
2000
2001
2002
2003
SDWA (PWSS and UIC combined) judicial penalties


SDWA (PWSS and UIC combined) value of injunctive relief
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$800,000,000
$700,000,000
$600,000,000
$500,000,000
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$300,000,000
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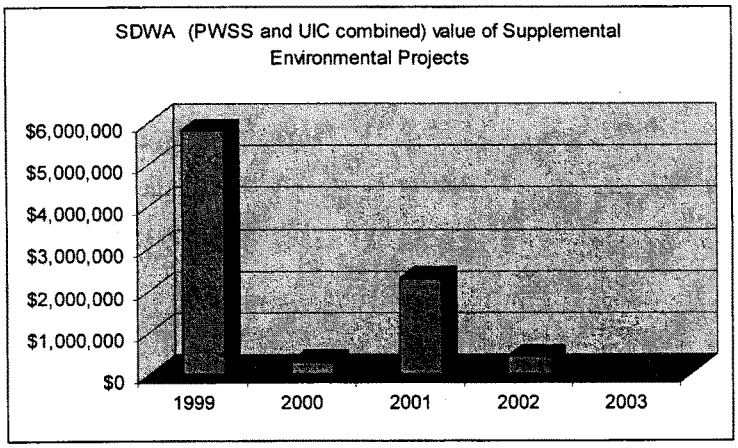
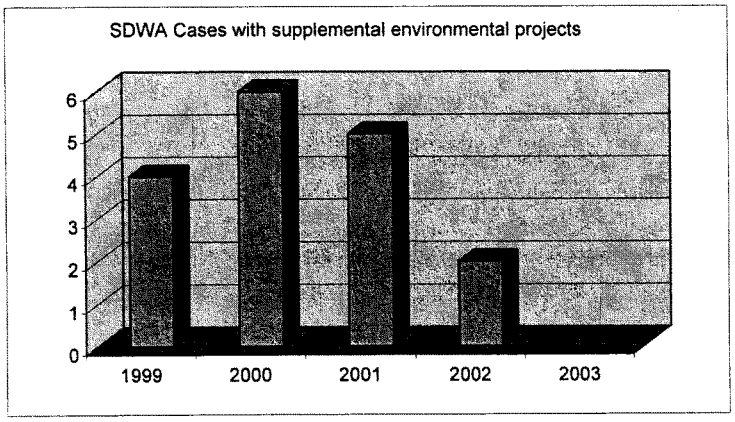
$100,000,000
$0
1999
2000
2001
2002
2003


SDWA (PWSS and UIC combined) value of Supplemental Environmental Projects
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$0
1999
2000
2001
2002
2003


SDWA Cases with supplemental environmental projects
6
5
4
3
2
1
0
1999
2000
2001
2002
2003

LEAD PIPES UNSATISFACTORY.
The Washington Post (1877-1954); Jun 9, 1893; ProQuest Historical Newspapers The Washington Post
pg. 7

LEAD PIPES UNSATISFACTORY.

Looking for a Good Sanitary Pipe for Supplying Water.

Capt. Powell, the Engineer Commissioner, has determined that a substitute must be found for lead pipes which, according to the present plumbing regulations, must be used in providing a water service for residences. The general fear that such pipes might cause lead poisoning under certain conditions makes their general adoption in the District a menace to the health of the people.

It has been shown that the chemical character of Potomac water causes such pipes to become coated on the inside with an insulation of carbonate of lime, soda, and clay, held in solution in the water. This coating, it has been argued, is a sure protection from danger of lead poisoning, but the engineer department has decided that it is too slight a safeguard. It is probable that the city's supply of water will be filtered at some future day, as sand filtration of drinking water has been adopted in many large cities abroad and is rapidly becoming popular.

Just what effect the filtered water may have on the coating of lead pipes has not been determined. The fact that iron pipes become thickly rusted on the inside, which causes a material loss of water pressure, makes their use unsatisfactory. Yesterday Capt. Derby, in charge of the division of water and sewers, examined the first substitute for lead pipe that has been presented since the investigation began. It was what is known as the improved Bower-Barff process, being a steel pipe coated inside and out with black oxide of iron. Capt. Derby reported it as "worth experimenting with," and tests of the pipe will be commenced at once. Several other styles of pipe are to be examined.

POTOMAC WATER AND LEAD PIPE.
The Washington Post (1877-1954); Sep 15, 1895; ProQuest Historical Newspapers The Washington Post pg. 12

POTOMAC WATER AND LEAD PIPE.

Source of Danger Where Such a Pipe Has Been Used a Long Time.

A. W. Dow, inspector of asphalt and cements, yesterday made his report to the Engineer Commissioner. In it he says considerable change has been made in the past year in asphalt pavement by the addition of a fine sand to a sand similar to that formerly used. Under the present circumstances this is the best that can be done. The only fine sand now available is that dredged off the foot of Seventeenth street.

The inspector deals also with the public wells analyzed. There were found to be 96 good ones, 41 suspicious, and 57 condemned.

The most interesting part of the report deals with the investigation of the action of Potomac water on lead pipe, to determine if enough lead is dissolved by the water to be injurious to public health. In order to have all conditions corresponding as near as possible with those of actual service, the inspector had one new forty foot lead service pipe in Anacostia and fifty feet of new lead pipe attached to the high service main at the U street pumphouse. From the investigation the inspector concludes that the only great source of danger is where the coating becomes detached by a rapid flow of water after the pipe had remained unused for some time. He will continue the investigation.

Chairman TOM DAVIS. Doctor, thank you for being here.

Dr. SILBERGELD. Thank you very much. I'm Ellen Silbergeld and I'm pleased to respond to your invitation to participate in this hearing. I'm testifying at your invitation as a private citizen. For identification purposes only, I'm professor of environmental health sciences and of epidemiology at the Bloomberg School of Public Health of Johns Hopkins University. I also served as a member of EPA's Science Advisory Board Committee several years ago, evaluating the scientific basis for EPA's current regulations concerning lead in drinking water.

As I noted, I live in a city that last year had its own problems with lead in drinking water, although I hesitate to mention them in the context of what we've heard today. But I would like to endorse the statement by several members of this committee and other witnesses that this is a problem unlikely to be confined to this setting and that a national investigation, perhaps with the research resources of the Congress, should be undertaken.

In my testimony, I'd like to provide answers to your questions concerning the health risks of lead poisoning on which I can claim expertise and make some comments in response to your other questions.

As has been noted in response to your first question, lead is an entirely toxic metal and its hazards have been described in medical writings for over 2,000 years. As long ago as 250 years ago, questions were raised about the potential contribution of lead in drinking water to health, both in England and in colonial America.

It's now the overwhelming consensus of both medical and public health experts that lead is highly toxic to multiple organ systems, including the central and peripheral nervous systems, the cardiovascular system, blood-forming system, the kidney and the reproductive systems of both males and females.

We understand that at the molecular level, lead can substitute for calcium and other essential elements to interfere with molecular biology of the cell at the level of DNA integrity, intra- and intercellular signaling, differentiation and development of complex systems like the nervous and reproductive systems, synaptic formation and memory storage in the brain, and vascular endothelial function.

Lead is toxic to the fetus, and it is carcinogenic. In public health policy, we do correctly focus upon preventing exposures of the developing child pre- and postnatally because of its effects on the developing brain, which have now been shown to persist through at least early adulthood. But I do want to stress, because of some of the comments earlier, that lead exposures are also highly toxic to adults, increasing risks of stroke and hypertension, as well as the risks of early mortality due to cardiovascular disease and cancer. I have annotated my testimony for you.

These risks, in fact, are particularly important for women, since there is evidence that later in life bone lead stores may be mobilized back into blood, particularly over the menopause, with associated increase in risk of clinical hypertension and elevated blood pressure. I, therefore, find it particularly disturbing to have heard that there were some attempts made to inform pregnant women

and families with young children while allowing others in the population to continue to be exposed without warning.

The toxic effects of lead, finally, can only be prevented by preventing exposure. We know this because a large multisite study was funded by NIH, including some of my colleagues, and it reported conclusively that treating children after exposure does not reverse lead toxic effects on neurocognitive function.

I also want to note that more recent studies suggest that our work and concerns over lead are not over, that the toxic effects on children and adults may occur even at the blood lead levels that are currently accepted in regulation and public health. It's therefore in this context that we should consider the current issues of lead in drinking water. This source adds on to all other sources of lead in the environment, and it is really very confusing to try and cite other sources as a means of deflecting concern over any one source. It is true that it's currently estimated by EPA that 20 percent of total daily exposures to most U.S. populations come from drinking water, but that's assuming that the current drinking water standards are, in fact, being met.

Lead exposure via drinking water alone can by itself be sufficient to induce toxicity, especially in young infants. In a landmark paper in 1967 it was determined that a cluster of mentally retarded children in Glasgow had been poisoned by lead in drinking water due to its storage in lead-lined tanks. Cases of individual infants poisoned by drinking water with lead concentrations well within the range reported for the District of Columbia, that is 50 to 150 parts per billion, have also been repeatedly reported.

This is the basis of my concern, members of this panel, that the WASA data are still not revealing sufficient information of great importance to consumers and probably also to the D.C. Health Department. That is, by providing its survey data, which was the last I saw reported, in only three categories, below 15 parts per billion, 15 up to 300 parts per billion and greater than 300 parts per billion, consumers are not receiving the information they need to know, nor are public health authorities.

You've heard that the Safe Drinking Water Act was amended to cover the national problem of lead in drinking water as it was increasingly recognized in the 1980's. I'd like to respond to your query to me as to whether the current lead program is effective as a public health measure. My answer is no. There are, within regulation, bans on lead solder and lead adulterated brass fixtures, among other elements, which have been largely effective at keeping new lead sources out of our water systems, but I think that further investigation is needed.

I myself have seen lead solder still on sale this year in hardware stores in Baltimore, and you may know that the city of Los Angeles has brought a major lawsuit against a supplier for using banned products in the municipal water system. I cite the study conducted by Berkowitz in 1995 showing that a large number of schools and day care centers in New Jersey were found to be continuing to use lead solder in their plumbing after EPA's promulgation of the ban on new use.

The effectiveness of water treatment as a means of dealing with lead in water, as I believe Dr. Edwards will speak to, and the public notification programs have a much less encouraging record.

The Safe Drinking Water Act and its regulations of the 1980's and 1990's have required actions to be taken when the lead guidance was exceeded, but in my opinion and in the opinion of my colleagues on the SAB panel, too much reliance was placed upon controlling simply by adjusting the parameters of water treatment. We were under a tremendous amount of pressure from both EPA and the water industry not to take a firmer stand upon identifying and removing lead elements within drinking water systems.

I'd also like to note that the sampling systems that are currently regulated under these provisions are wholly inadequate to characterize the nature and distribution of the risks of a problem that is location-dependent. The possibility of missing even widespread so-called "hot spots" is exemplified by the data that are beginning to be revealed in Washington, DC. For that reason, I am reluctant to conclude as to the association between temporal trends in water treatment and apparent spikes in lead content of drinking water. I'm not certain these are spikes.

Let me speak to the other tool in the Safe Drinking Water Act lead regulation of public notification and risk communication. Does this work? Well, obviously it cannot work if communication is insufficient, but consumer information can only work if consumers can actually and feasibly reduce their risks by individual actions, and I do not think that is the case.

As you've heard, even extensive flushing for over 15 minutes—and I share the opinion of Congressman Moran on that—does not always reduce the contribution of lead from lead pipes, but of even greater concern, the lowering effects of flushing are only temporary. Lead levels rise again, it's been shown in studies, after as little as 15 to 30 minutes of no use.

Therefore, the notion that you can wake up in the morning, let the water run for 10 minutes, assuming that you can, and that will then protect all water users for the rest of the day is erroneous. In fact, one study concluded that relying upon this could result in unacceptable exposures to both young children and pregnant women when water lead concentrations are in the range of 35 to 50 parts per billion.

For the D.C. Health Department to go even further to recommend no consumption of tap water to thousands of D.C. residents is unconscionable. I have to say it reminds me that Marie Antoinette must be running public health here, "Let them drink Evian." Given the general socioeconomics of lead risks, it's likely that most of those at greatest risk will have the least means to purchase their own water, and of course, not all bottled water is devoid of lead risks as well.

In conclusion, Mr. Chairman, in my opinion, the issue of lead in the D.C. water supply is a serious and immediate public health problem for adults and children who consume, reside or work in D.C. Moreover, it is probably a signal of similar problems that exist in many other water systems nationwide.

And finally, elements of the Safe Drinking Water Act are demonstrably ineffective in protecting our drinking water from lead. Lack

of full enforcement on product bans appears to be widespread. Local testing and notification programs, even in the letter of the regulation, are inadequate, and they are clearly not being monitored by EPA. And reliance upon even perfect information transmission and consumer action such as flushing is not sufficient to protect the public's health.

I'm happy to answer your questions on this testimony or other topics that I may be able to discuss.

Chairman TOM DAVIS. Thank you very much.

[The prepared statement of Dr. Silbergeld follows:]

LEAD CONTAMINATION IN THE DISTRICT OF COLUMBIA WATER SUPPLY

OVERSIGHT HEARING BY THE COMMITTEE ON GOVERNMENT REFORM

MARCH 5, 2004

TESTIMONY
OF
PROFESSOR ELLEN K SILBERGELD, PhD
BLOOMBERG SCHOOL OF PUBLIC HEALTH
JOHNS HOPKINS UNIVERSITY
BALTIMORE MARYLND
esilberg@jhsph.edu

I am Ellen Silbergeld, and I am pleased to respond to your invitation to participate as a witness in this hearing on lead contamination in the District of Columbia water supply, and responsibilities of the District of Columbia Water and Sewer Authority and the federal government in this matter. I am testifying at your invitation, as a private citizen. For identification purposes only, I am Professor of Environmental Health Sciences at the Bloomberg School of Public Health of the Johns Hopkins University in Baltimore Maryland. I have attached a short professional resume. I have served on several state, national, and international committees and advisory boards related to preventing childhood and adult lead poisoning, including service as chair of the Maryland state panel on lead paint poisoning prevention, the CDC Scientific Advisory Committee on Childhood Lead Poisoning, and as an advisor to the World Health Organization, the International Labor Organization, the World Bank, the National Research Council, the Department of Housing and Urban Development, and the US EPA. I was a member of EPA's Science Advisory Board committee evaluating the scientific basis for EPA's current regulations concerning lead in drinking water.

I have conducted research on lead toxicity, exposures, and mechanisms for 30 years at Johns Hopkins, the National Institutes of Health, and the University of Maryland Medical School. Most recently, my research group has published three major papers on the associations between lead and cardiovascular disease, the role of genetics in lead toxicity, and the mechanisms by which lead can increase risks of cancer. This work has been recognized by several awards, notably the Barsky Award from the APHA and a MacArthur Fellowship. In 1988, the lead industry referred to me as "an ardent anti-lead activist" and I am proud of that characterization, which reflected my participation in what has been called the major environmental health achievement of the last century, the bipartisan effort to eliminate lead from gasoline.

I live in a city that last year had its own problems with lead in drinking water, including failures to disclose information and inexcusable delays in taking take needed actions to protect the health of children in our schools. As in DC, it took the attention of media and pressure from parents to elicit compliance with the law. From this experience, I would suggest to this Committee that the issue before you today is unlikely to be limited to the District of Columbia. There are likely to be many public water supplies in this country where water is not being tested, or if it is tested where the information is not promptly or fully communicated to consumers, and where appropriate actions are not being taken. I urge the committee to examine this issue nationally, with the research resources of the Congress. The DC situation exemplifies the failures of a public health program based upon testing and notification by the agency that is also responsible for taking action. This in no way excuses the DC Water and Sewer Authority from its responsibilities, and I did not excuse the Baltimore City Health Department from a similar dereliction of its responsibilities. Even as of last week (www.dcwasa.com, February 27, 2004), WASA was not forthcoming in its disclosures to DC consumers: first, WASA suggests that there are never any sources of lead in the mains, and second, its survey results are presented in an incomplete and misleading fashion:

In this testimony, I will provide answers primarily to your question concerning the health risks of lead poisoning, on which I can claim expertise, and I will make some comments in response to your other questions.

1. Hazards of lead exposure

Lead is an entirely toxic metal, and its hazards have been described in medical writings for over 2000 years. Effective actions to protect the health of the general population were primarily initiated over the last 100 years although concerns over water contamination by lead were noted as long ago as the late 1700s in England and in colonial America (Schock et al 2002).

It is now the overwhelming consensus of both medical and public health experts that lead is highly toxic to multiple organ systems, including the central and peripheral nervous systems, the cardiovascular system, the kidney, and the reproductive system of both males and females. We understand that at the molecular level lead can substitute for calcium and other essential trace elements to interfere with the molecular biology of the cell at the level of DNA integrity, intra- and intercellular signaling, differentiation and development of complex systems like the nervous and reproductive systems, synaptic formation and memory storage in the brain, and vascular endothelial function. Lead is toxic to the fetus and it is carcinogenic (Silbergeld 2003). Just two weeks ago an expert group of the International Agency for Research on Cancer upgraded lead to a probable human carcinogen. In public health policy and medical guidance, we correctly focus upon preventing exposures of the developing child, pre- and postnatally, because of its effects on the developing brain, which have now been shown to persist through at least early adulthood (Silbergeld 1997). We know that lead exposures of pregnant women are quickly transferred to the fetus, and we know that prenatal exposures to lead are associated with adverse effects on early childhood growth, hearing, and cognitive development. Lead is a recognized cause of attention deficit hyperactivity disorder.

Lead exposures are also toxic to adults, increasing risks of stroke and hypertension as well as the risks of early mortality due to cardiovascular disease and cancer (Lustberg and Silbergeld 2003; Silbergeld 2003).). These risks are particularly important for women, since there is evidence that later in life bone lead stores may be mobilized back into blood over the menopause, with associated increases in blood pressure (Nash et al 2003).

The toxic effects of lead can only be prevented by preventing exposure. A large multisite study funded by NIH, including researchers at Hopkins, reported that treating children after exposure did not reverse lead toxic effects on neurocognitive function (Rogan et al 2001). We have found that earlier exposures to lead are associated with later cardiovascular disease, at a point long after the time of exposure (Lustberg and Silbergeld 2003; Navas Acien, et al , 2004)

This consensus has driven remarkable policy change in this country, including bans on certain uses of lead and controls on many other sources. As a consequence, lead exposures in the general public have decreased significantly over the past 20 years

(Silbergeld 1997). But *more recent studies suggest that our work is not over, that the toxic effects of lead on children and adults may occur even at the blood lead levels that are currently accepted in regulation and public health* (Canfield et al 2003). Moreover, recent data from the CDC national surveillance indicate that significant numbers of US children and adults are still overexposed to lead at current guidance levels, and thus continued vigilance and intervention remain important. According to the CDC (MMWR 2003), *DC failed to meet the PHS Year 2000 goal of eliminating childhood lead toxicity since in 2001, out of the 30% of children <6 yrs who were tested, nearly 3% had blood lead levels above 10 ug/dL.* It is in this context that we should consider the current issues of lead in drinking water. This source adds onto all the other sources of lead in the environment, providing an estimated 20% of total daily exposures to most US populations (Shannon and Graef 1992; Maas et al 2002). *But lead exposure via drinking water alone can by itself be sufficient to induce toxicity, especially in young infants.* In a landmark paper in 1967, Sir Abraham Goldberg and his colleagues traced the etiology of a cluster of mentally retarded children in Glasgow to the storage of drinking water in lead lined tanks (Gibson et al 1967). Shannon and Graef (1989) reported the case of an infant poisoned by drinking water with a lead concentration of 130 ppb. EPA considers that "*lead at concentrations of 40 ppb or higher poses an imminent and substantial endangerment to the health of children and pregnant women*" (www.epa.gov, drinking water information site; see Sherlock et al (1984) for data supporting this statement). This is the basis of my concern that by providing its survey data in only three categories – that is, >15 ppb; 15 up to 300 ppm, and ≥300 ppb -- the WASA is still concealing information of great importance to consumers and to the DC Health Department.

In the 1980s, as the levels of medical concern for lead exposures were lowered, it was recognized that drinking water could be a source of increased lead exposures, primarily from the long use of lead in many parts of the water distribution system. The Safe Drinking Water Act was amended to cover the national problem of lead in drinking water. It is important to recognize that lead rarely if ever contaminates drinking water at the source -- reservoirs or groundwater -- but it can enter our drinking water through the entire distribution system including mains, service lines, in-house plumbing, water coolers, and plumbing fixtures within our houses, schools, and other buildings. National surveys undertaken at this time confirmed the widespread nature of the problem of lead in drinking water. Certain water systems were identified as presenting increased risk, including portions of the DC water system. *I served on the EPA's expert committee to evaluate a health-based standard for lead in drinking water and the EPA promulgated a health-based guidance level of zero for lead in drinking water.* Its subsequent regulations (using an enforceable level greater than zero) included a ban on the use of lead in water systems, including use of lead containing solders and brass fixtures with excess lead in residential plumbing. EPA required actions to be taken by public water systems when the enforceable standard was exceeded. The EPA also required public drinking water systems to test and communicate test results to water consumers.

Has the SDWA lead program been effective as a public health measure? The bans on lead solder and lead-adulterated brass fixtures have been largely effective at keeping new lead sources out of our water systems, but the Congress might investigate the

implementation of these portions of the SDWA regulations nationally. I myself have seen lead solder still on sale in hardware stores in Baltimore, and the city of Los Angeles has brought a major lawsuit against a supplier for using banned products in the municipal water supply. In a study conducted by Berkowitz in New Jersey (1995), a significant number of schools and daycare centers were found to have used lead solder in their plumbing *after* EPA's promulgation of the ban on new use. It is unlikely that this experience is confined to New Jersey.

The effectiveness of water treatment as a means of dealing with lead in drinking water, and the public notification programs have a much less encouraging record. The SDWA required actions to be taken when the lead guidance was exceeded, but *too much reliance was placed upon controlling simply by adjusting the parameters of water treatment*, specifically corrosion control through changing pH and alkalinity as calcium carbonate as well as the use of other additives. In fact, the EPA and our committee were pressured by the water industry to permit this "fix" in order to avoid the burden of actually replacing water lines. Water treatment controls are appropriate only to some extent, and only in some systems. Information from WASA indicates that some of the lead problems are extensive and likely to be related to lead in the mains, which will be difficult to deal with simply by flushing the lines. Moreover, there are other problems with the treatment only strategy, related to ensuring effective control over pathogens in water, also a problem in the DC system.

The other "tool" in the SDWA lead regulation is public notification and risk communication. As a public health professor, I am generally wary of relying upon these tools as extensively as the SWDA does, because they only work when testing and notification are both prompt and accurate and when consumers are able to use the information to effectively reduce their risks. As I noted above, we have unfortunate experience in Baltimore, as you do in DC, that *we cannot rely upon prompt testing and accurate notification*. In fact, placing this burden on the water system sets up a conflict of goals and responsibilities: if their tests indicate that water treatment is needed, then they must spend the money for adjusting this process; if their tests indicate that water treatment is not enough, then they must spend even more money for replacing lead sources in the system. This part of the problem could be avoided if the Congress were to appropriate sufficient funds to the states to cover these costs, but like many infrastructure problems, we have not done so even while we can apparently pay to fix the water systems of Iraq.

Does consumer notification work? Consumer information can be a powerful source for voluntary change and health promotion, but only if consumers can actually and feasibly reduce risks by individual actions. Thus, even if consumers are being properly notified, we have to examine if and how consumers can respond to notifications and effectively reduce their exposures to lead in drinking water. *EPA suggests that consumers avoid consumption of first draw water*, since if the problem of lead is confined to the proximal part of the water distribution system, then running the tap will result in purging those gallons of water that contain the highest lead levels. However, if the problem is not confined to this part of the system, then running water will not work. It does not deal

with extensive lead problems within the system, because even extensive flushing (>15 min) does not reduce the contribution of lead from lead pipes. Moreover, *the lowering effects of flushing are only temporary and lead levels rise again after as little as 15-30 min of no use* (Schock et al 1996; Murphy 1993; Gulson et al 1997). The latter authors concluded that this effect could result in unacceptable exposures to both young children and pregnant women, when water lead concentrations remained in the range of 35-50 ppb. Finally, placing the burden of risk reduction on consumers can result in unacceptable exposures to those most at risk -- for example, a young child getting up in the middle of the night for a drink of water, or a crying infant whose parents are quickly mixing formula. For the DC health department to go even further, to recommend *no* consumption of tap water to thousands of DC residents is unconscionable, as if Marie Antoinette were running public health – let them drink Evian! Given the general socioeconomics of lead risks (which are the exemplar of environmental racism), *it is likely that many of those at greatest risk will have the least means to purchase their own water*. An analysis of WASA's maps suggests this. Nonetheless, it may well be the case that for many consumers it is prudent to recommend no consumption of drinking water, including use for pets and use in humidifiers, but the burden of ensuring their safety by private purchase of bottled water should not be placed upon them. Moreover, not all bottled water is without risk including lead (Misund et al 1999; Dabeka et al 2002). The assurance of a safe and healthful water supply has been a jewel in our society for almost 100 years; this is not a matter of public health to be outsourced.

In conclusion, Mr. Chairman, in my opinion *the issue of lead in the DC water supply is a serious and immediate public health problem* for many consumers who reside or work in DC. Moreover, it is probably a signal that *similar problems may exist in many other water systems nationwide*. Second, *elements of the SDWA are demonstrably ineffective in protecting our drinking water from lead*: lack of full enforcement on product bans appears to be significant; local testing and notification programs are not monitored by the EPA; and reliance upon consumer action is not sufficient to protect the public's health. I hope you will consider this issue in its national perspectives and also in the context of the urgent need for substantial support for the states and localities in dealing with this and many other crises in our infrastructure that together belie our assumptions of a safe and healthful environment. I am happy to answer your questions on this testimony or other topics that I may be able to discuss.

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NIH BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2.

NAME	TITLE
Ellen K. Silbergeld	Professor

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.*)

INSTITUTION AND LOCATION	DEGREE (*if applicable*)	YEAR(s)	FIELD OF STUD
Vassar College, Poughkeepsie, N.Y.	A.B.	1967	Modern History
The Johns Hopkins University, Baltimore, MD	Ph.D.	1972	Environmental Engin

RESEARCH AND PROFESSIONAL EXPERIENCE: Concluding with present position, list, in chronological order, previous employment, experience, and honors. Include present membership on any Federal Government public advisory committee. List, in chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. If the list of publications in the last three years exceeds two pages, select the most pertinent publications.
DO NOT EXCEED TWO PAGES.

PROFESSIONAL EXPERIENCE

1972-75	Postdoctoral Fellow in Neurotoxicology: The Johns Hopkins Univ Sch of Hygiene & Public Health, Baltimore, Maryland
1975	Assistant Professor: Department of Environmental Medicine, The Johns Hopkins Univ Sch of Hygiene & Public Health
1975-79	Staff Fellow/Head: Behavioral Neuropharmacology Unit, Experimental Therapeutics Branch, NINCDS, NIH
1979-81	Chief: Section of Neurotoxicology, NINDS, NIH, Bethesda, MD
1982-84	Guest Scientist: Reproductive Toxicology Section, Pregnancy Research Branch, NICHD, NIH, Bethesda, MD
1982-91	Chief Toxics Scientist: Environmental Defense, Washington, D.C.
1987-	Adjunct Faculty: Department of Health Policy & Management, The Johns Hopkins Univ Sch of Public Health
1990-01	Adjunct Professor: Dept of Environmental Health Sciences, The Johns Hopkins Univ Sch of Public Health
1991-	Professor: Program in Toxicology, University of Maryland School of Medicine, Baltimore, MD
1992- 01	Professor: Dept of Epidemiology & Preventive Medicine, Univ of Maryland School of Medicine, Baltimore, MD
1993-	Senior Consultant/Toxicologist: Environmental Defense Fund, Washington, D.C.
1996-01	Director: Program in Human Health & the Environment, Univ of Maryland School of Medicine, Baltimore, MD
2002-	Professor, Dept of Environmental Health Sciences, Health Policy and Management, and Dept of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

PUBLIC ADVISORY COMMITTEE MEMBERSHIPS (Selected)

1983-89	National Research Council Board on Environmental Sciences and Toxicology
1983-89 & 93-99	EPA Science Advisory Board Executive Committee
1987-89	Member, NSF EVIST Study Section
1989-92	NIH-NTP Board of Scientific Counselors
1990-94	Maryland Panel on Lead Poisoning (Chair)
1992-	EPA Expert Scientific Group on Risk Assessment of Dioxins
1994-95	Epidemiology Panel, U.S. Army Breast Cancer Research Program
1994-95	Secretary of Energy Advisory Board
1994-	Editor-in-Chief, Environmental Research
1996-99	HHMI Fellowship seletion panel, Epidemiology (Chair, 1999)
1996-98	US EPA Endocrine Disruptors Screening and Testing Advisory Committee
1997-02	CDC Advisory Board, Center for Environmental Health
2000-	American Cancer Society Environmental Carcinogenesis Committee
2000 -	Member, Commission on Agricultural Biotechnology, Health and the Environment, NAS-NRC
1999-01	Pew Commission on Environmental Health
2000-01	member, expert workgroups on agricultural antibiotic use and human health, FAO-CODEX (UN) and WHO

2002- NRC Committee on Environmental Technology
2002-03 Environmental Health Consultant, PAHO-WHO
2002 NIEHS Site Visit Chair
2003 NIEHS Special Interest Study Sections

HONORS & AWARDS (Selected)
1967 Graduate: S*umma cum laude* (Vassar College), Phi Beta Kappa
1967 Leverhulme and Fulbright Fellowships
1971-72 Rockefeller Foundation Predoctoral Research Fellowship
1974-75 Joseph P. Kennedy Jr. Fellowship in Neurosciences
1987 Warner-Lambert Award, Distinguished Women in Science, University of Wisconsin
1991 Wolman Award, Maryland Public Health Association
1992 Barsky Award, APHA
1993 MacArthur Foundation Fellow
1995 Women Who Make a Difference, Chatham College
1998 Fellow, International Commission of Occupational Health WHO

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Chairman TOM DAVIS. Dr. Edwards.

Mr. EDWARDS. Thank you. I chose to support my verbal comments with a presentation.

Chairman TOM DAVIS. That would be fine. Make sure your button is on. I don't hear it.

Mr. EDWARDS. Yeah. I've chosen to support my verbal comments with a picture presentation that will be viewed on the monitor here, and it's been given to you in this handout form.

While it's being cued up, I'd like to acknowledge the work of my graduate student who has been working on this problem as it exists in the D.C. WASA system full-time almost for a year now.

It's my unfortunate duty to tell you that there's not just one serious corrosion problem here that is impacting public health, there are actually two. We can look at the first slide here. You can see the picture of a copper pipe, what was once a copper pipe before it was exposed to D.C. WASA water. The clamps on that pipe are each covering a leak that was being eaten from the pipe inside out.

Can I have the next slide, please?

I just want to point out that not only does this cost a lot of money, as you can see in this slide, it causes extensive property damage. I know some people in the Washington area who lost their homes over the costs associated with pinhole leaks, but pinhole leaks also create the toxic mold growth in homes. So this is a public health issue.

Next slide, please.

This background is important because it tells you how I first got involved in this problem. I actually met Seema Bhat, who was the water quality engineer who was subsequently fired by D.C. WASA, at a pinhole leaks meeting held at Washington Suburban Sanitation Commission in September 2002.

Next slide, please.

At that time, she alerted me to a problem with "first draw" samples, and so when I went out and sampled on my own initiative on March 16, 2003 in the homes of D.C. WASA customers. I made a special effort to try to take samples for lead based on what Seema had told me, and it was at that time I first became aware of a very unusual and, frankly, terrifying problem.

Next slide, please.

I drew a little cartoon here to kind of explain what had been going on in terms of sampling prior to March 2003. You can see on the upper left the first draw sample, and you'll hear a lot about that. That's the first liter of water to come out of people's plumbing. And the presumption was, if you read EPA guidelines, was that this was the worst sample. Another sample was taken after 5 minutes of flushing, and if you look over to the far right of the graphic, you can see that in all likelihood after 5 minutes, the water you collect in your sample has been sitting in the main. It never had time to contact the lead-bearing materials that are of greatest interest in this work.

So if we just make a plot of what you'd expect to see as you turn on the faucet on the lower graph, you have your first draw sample, which everyone thought was the worst sample. Five minutes later, the other samples they took were purported to show the benefits of flushing. But I'll point out we really don't have a clue what was

coming out at any time in between, including the 1-minute flush time that was being recommended. The people flushed for a minute and collected a sample.

So I resolved when I went into these homes to go in and collect a profile. And what you see is on this next graph here, what I discovered, on the Y axis you have the amount of lead that was collected in each sample, and on the X axis, the bottom, you have the flushing time of the sample. And I ask you to just look at one point, which is the sample that came out which I collected after 1 minute of flushing. This sample had lead over 1,250 parts per billion, which is more than 87 times the action limit. I noted in my written testimony that the actual lead in that sample was probably higher than that, because even after a 1 to 10 dilution, it was still off the ability of my field instrument to detect it.

I'll note also that this is the very sample that would be consumed after you followed the 1-minute flushing recommendation. In other words, of the samples I collected, if you followed guidance, you would be getting the worst amount of lead possible in this home.

I'll tell you two other things that should be of concern to you at this time. This home did not have a lead service lateral. It was an apartment.

The next slide, please.

So from April 2003 to present, I have been working with my students on this very intensively, conducting unfunded research to get at the causes of this problem.

Next slide, please.

This is the sort of result that we obtained back in September of last year. On the Y axis you have the amount of lead leached to our laboratory solutions in milligrams per liter. And I have two bars here. The first is the before bar—and this is from brass, by the way. This is not from pure lead pipe. The before bar represents the amount leached to a synthesized version of WASA water with free chlorine. You can see that bar is quite low, and when we used the exact same WASA water, but with chloramine, the amount of lead leach went up by a factor of 33, up to 15 milligrams per liter leached to the water from brass.

We have other data, which is not on that presentation but which is the next slide here—so don't go ahead on the slide—that shows chloramines have the same direct problem with pure lead as well. So we have proven this in the laboratory and those experiments were finished about 6 months ago, as a matter of fact.

From November 2003 to the present, I have been working and working and working to get that 1-minute flushing recommendation changed. I strongly believe that 1-minute flushing recommendation was not sufficiently protective of public health.

Next slide.

So, having been given a background, I thought—I went to the questions that were posed to me directly. What did I find?

First, I found in terms of WASA and EPA, the intent of a lead and cooper regulation is not always being satisfied due to regulatory gaps, as explained in my written testimony. The reality is WASA and EPA are myopically focusing on the letter of the recommendation, and that is an important distinction here. The intent of this regulation is not being achieved.

I've also noted that other regulations at EPA are being given priority over the lead regulation. Specifically, regulations concerning disinfection byproducts are forcing utilities to make changes to their water quality, and many times they don't want to switch to chloramines. And EPA has ignored years of warnings that these changes are going to cause a problem with home plumbing.

Next slide.

So this is just an example of a presentation that I gave to EPA National Headquarters, April 18, 2003. This presentation was held at the direct behest of Christine Todd Whitman. And Washington Suburban Sanitation Commission had been seeing serious problems with home plumbing that had resulted from treatment changes. And if you just go to the slide that you see up here—which you have to skip ahead one—I'll just read a quote from that presentation explaining the cost of doing nothing: "if nothing is done, there's a likelihood of a major plumbing catastrophe costing homeowners tens of billions of dollars each year. It could be a serious miscalculation to assume a day of reckoning is not already approaching."

I've been told by students that I'm an effective communicator. I've been told by consumers that I'm an effective communicator, but I can tell you this message got nowhere with the U.S. EPA.

Next slide.

Do you think that the use of chloramines has a highly corrosive effect on service lines and allows lead to dissolve from the pipelines? Absolutely yes. Our laboratory experiments prove that convincingly. Chloramines are part of the problem, a part of the problem as it occurs here at D.C. WASA.

What, if anything, should be done? First off, EPA should reconsider rules that are, as we speak, pushing utilities to use chloramine. Utilities should be allowed to stick with chlorine. It is possible that by lowering the pH here in dosing of orthophosphate that the lead problem will go away. But I'm here to tell you, and in my written testimony I make it very clear, EPA does not have the answers to this problem as it exists before us. And we urgently need some research on this so that consumers get the answers to the questions that they have.

And so I'll just acknowledge the D.C. WASA customers, the customers who have let me into their homes to uncover these problems, the National Science Foundation, my graduate students, and my family who have been through one very, very long year. Thank you.

Chairman TOM DAVIS. Thank you very much.

[The prepared statement of Mr. Edwards follows:]

Virginia Tech

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Chairman Tom Davis and the Committee on Government Reform
U.S. House of Representatives
2157 Rayburn House Office Building
Washington, D.C. 20515

March 2, 2004

Re: Written Testimony March 5, 2004

I am a Professor of Civil Engineering at Virginia Tech and have devoted much of my career to lead and copper corrosion issues for which I am internationally recognized. I was awarded a Presidential Faculty Fellowship by the White House and the National Science Foundation in 1996 for this work. I am the current President of the Association of Environmental Engineering and Science Professors. Over the last four years, I have worked intensively on corrosion issues experienced by consumers and utilities using Potomac River water. These efforts include research work with the Washington Suburban Sanitation Commission (WSSC) on copper pitting and Fairfax, VA on a desk top study to pre-empt possible problems with lead leaching in drinking water. My research team at Virginia Tech has conducted hundreds of corrosion experiments using real or simulated versions of Potomac River water.

More specific to the current issue in question, I worked for Cadmus as sub-contractor to the United States Environmental Protection Agency (US EPA) in efforts to understand the problem of excessive lead in the drinking water of the District of Columbia Water and Sewer Authority (DC WASA) customers. I have personally collected water samples in the homes of DC WASA customers in an attempt to understand the problem of copper pitting in their homes, and in the process, I discovered a very serious problem with lead contamination that is the focus of today's discussion. I designed the sampling plan DC WASA executed through mid-December 2003, which first unambiguously illustrated the very serious nature of the existing lead problem to both DC WASA and EPA. I also designed many of the experiments that are now in progress at DC WASA to improve understanding of the problem, and I recommended mitigation strategies that they could employ to mitigate the problem. Indeed, to my knowledge, I was the only expert who gave significant advice to the US EPA and WASA on the lead problem through at least mid-December of 2004.

I have very strong concerns regarding the way in which the US EPA has handled the present crisis. I have expressed most of these concerns directly to the US EPA in detailed letters I sent to George Rizzo and Cynthia Dougherty on February 8th and February 10th. I am willing to share these letters with anyone interested in learning the full extent of my concerns or developing a detailed timeline of events. In this letter I will focus on two opinions that I have developed. The first is that US EPA actions are not adequately protecting consumers' from excessive levels of

lead in drinking water. The second is that the US EPA has failed to heed warnings that water treatment changes are adversely impacting home plumbing systems. That failure has led to adverse impacts on public health and private property that we are only beginning to appreciate. These opinions are my own and I do not speak for any other entity.

1. US EPA REGULATIONS ARE NOT ADEQUATELY PROTECTING CONSUMERS

I base this opinion on four points. First, I discuss how the Lead and Copper Rule has been given a lower status versus other regulations. Second, I discuss some obvious gaps in monitoring programs for lead. Third, I will review what I believe are EPA's relatively weak steps to make sure that the public was adequately notified regarding exposure to excessive levels of lead in drinking water. Fourth, I describe a serious potential problem with "lead free" brass devices, and the possible danger these devices pose to consumer health.

1.a. Lead and Copper Rule is Given Lower Priority

There is a popular misconception that the EPA sets a maximum allowable amount of lead in consumers' drinking water. In reality, there is no maximum allowable concentration of lead in drinking water. The EPA standard of 15 ppb for lead is known as an "action level." If 10% of samples collected from homes thought to be highest risk contain more than 15 ppb lead, additional "action" is required. In simple terms, the utility has to show that it has taken steps to minimize lead leaching without compromising other regulations which have real maximum contaminant levels (MCLs). For example, if a system could reduce 90%'ile lead to below 15 ppb by raising pH to 9, but taking that action would cause it to violate an MCL such as that for disinfection by-products (DBPs), the system can ask for and be granted permission to continue exceeding the lead action limit indefinitely. Some systems in the US have never regularly achieved the lead action limit.

A great deal of though has gone into the existing regulatory scheme, and while I do not personally agree with the lower priority given to lead by the EPA versus DBP's, a great deal of thought should go into possible changes. However, I do note that the designation of an "action level" for lead, without any requirement to achieve a certain minimal level of lead in drinking water that is consumed, is one key reason why the speed of the DC WASA and the US EPA response has not met expectations of many consumers.

1.b. Obvious Gaps in Monitoring

Prior to summer of 2003, only two types of samples were collected in the homes of DC WASA residences. The first sample is known as "first draw," which is the first liter of water to come out of the faucet when opened (Figure 1). According to the conventional wisdom, the first draw sample usually is often believed to be the "worst case" sample, and therefore it is used as the main determinant of compliance with the US EPA Lead and Copper Rule. The second sample was collected after 5 minutes of flushing. After 5 minutes, enough water has been drawn through the pipe such that the sampled water probably originated in the main, without having prolonged contact with the smaller "service" pipes that transport the water between the home and the water main. Since there is relatively little lead material in the main, the water sampled after 5 minutes can be expected to have low levels of lead.

It has always bothered me that samples were not routinely collected in between these two points. It is this water, in fact, that would be consumed if it were flushed for a short period of time as per written recommendations given to the public when the lead action limit is exceeded. As an example of these recommendations, I note that many other cities with relatively high lead at the consumers' tap also recommend 15-30 seconds of flushing before consuming water as a means of minimizing exposure to lead (Figure 2). I further note that it is the water between the two collected samples (first draw and 5 minutes) that has contacted the three sources of lead that I deem most worrisome in the present situation. The first two problematic sources of lead are well known: pure lead pipes and lead solder legally installed before such materials were banned. The third source, brass in-line devices, are less appreciated as a potential lead hazard and will be discussed in a later section. The main point, however, is that the water consumed when following the flushing recommendations is not the same water that is sampled during monitoring. In fact, at DC WASA prior to about summer 2003, the utility likely had no idea as to the levels of lead in the water between the first draw and the sample collected after 5 minutes of flushing. The EPA probably did not know either.

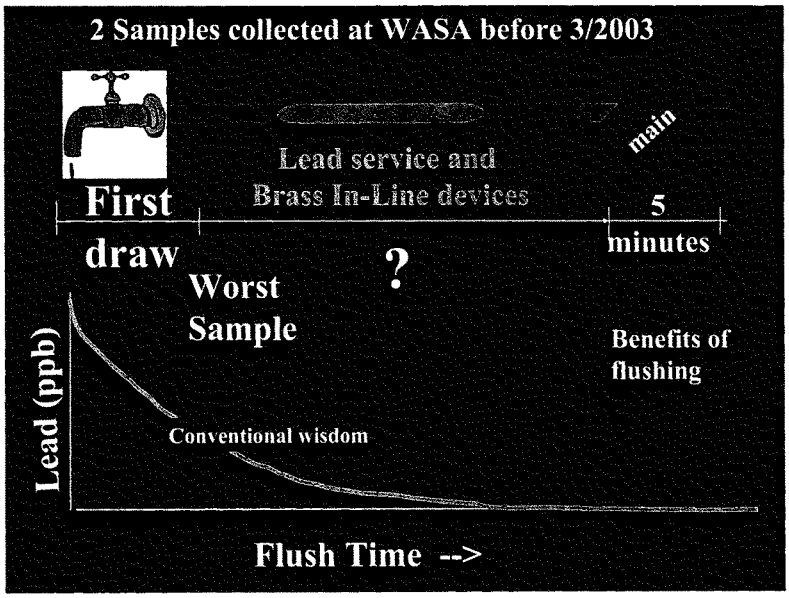


Figure 1. Illustration of two key samples collected at DC WASA prior to about summer of 2003.

These easy steps can help you avoid possible exposure to lead from household plumbing:

- Use only fresh water from the cold water tap for drinking, cooking, or making baby formula. If a faucet has not been used for more than 6 hours, get fresh water from the main. Run the cold water faucet until the water is noticeably colder (usually about 15-30 seconds).
- If you need hot water for drinking or cooking, draw fresh water from the cold water tap and heat it.
- Use only lead-free solder when making plumbing repairs. It's the law: Oregon banned the use of lead-based solder in water systems in 1985.

Look for NSF certified faucets and plumbing products. Call NSF International's consumer hotline at 877-867-3435 or email for information about certified faucets and plumbing products.

Figure 2. Typical Consumer Notification Providing Guidance to Avoid Possible Exposure to Lead from Household Plumbing. http://www.portlandonline.com/water/index.cfm?c=29587

On March 16, 2003, I was collecting samples in many consumers' homes at DC WASA to learn more about the problem of pinhole leaks. Since I had been told (by Seema Bhat) that DC WASA was experiencing problems with relatively high first draw samples, I decided to collect a series of samples from the tap as a function of flushing time. The results were truly frightening (Figure 3). At one home I measured more than 1250 ppb lead on my field instrument. I say more than 1250, because the sample was still off scale after diluting by a factor of 10 with distilled water, and the highest legitimate measurement is 1250 ppb. I really do not know how high the lead in that sample actually was. My measurements at a second home were equally troubling (Figure 3). Field sampling is not as accurate as the testing that can be done in the lab, and is often subject to more interference. Thus, this result had to be viewed with considerable skepticism, and would require clear confirmation before it could be used to change policy or inform the public. However, I deemed this to be an important preliminary result worthy of notifying DC WASA employee Seema Bhat about, a requirement that I remember satisfying. I also immediately began to conduct experiments at Virginia Tech to try and identify causes for this likely problem and potential solutions. These experiments were almost completely unfunded and conducted as a public service to DC WASA consumers, who I anticipated would soon be in need of the answers.

I believe the implications of this particular monitoring gap are obvious. Specifically, samples collected after 0.5, 1, 3 and 5 minutes flushing had unacceptable levels of lead according to any reasonable public health standard. Following the normal EPA written recommendations on flushing at these homes would actually cause consumers to drink water containing very high levels of lead, and in fact, would have sometimes markedly ***worsened*** exposure relative to what they would have consumed without following the guidelines. Another important point is that I was told this home did not have a lead service lateral.

There are also many other monitoring gaps that are troubling, but space does not allow for a complete discussion of all such problems herein.

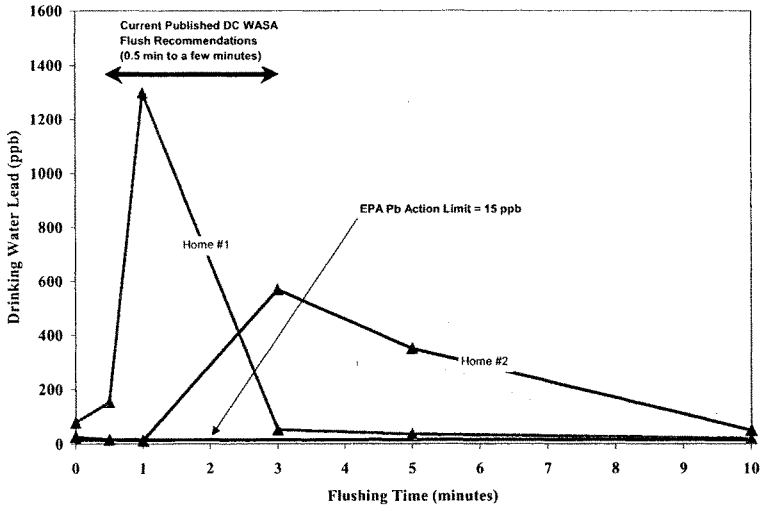


Figure 3. My sampling data collected from DC WASA homes 3/16/2004.

1.c. EPA's weak steps to make sure that consumers were given timely information

I have multiple criticisms of how the US EPA and DC WASA have handled this crisis since at least mid-December 2003. The action(s) that I find least excusable, and which I can best document, was the pressure that I had to apply before the consumers' were notified that written recommendations on flushing were not adequately protective of public health. Before going into the timeline of events that details my frustration, I want to make a clear point about public notification.

Society takes the issue of lead hazard warnings very seriously. In fact, a Washington DC area landlord was recently sentenced to jail for failing to warn tenants of known lead hazards in their apartments (Figure 4). I mention this fact to put my own strong and uncompromising actions into context. I have been forced to confront powerful entities and agencies that might normally consider sponsoring my own research. Some professional colleagues have told me that my career in drinking water treatment research is likely to end as the result of these confrontations, and for that reason, many of my professional colleagues urged me to drop this issue completely. However, my family and consumers that I work with urged me to see this issue through, and they did so in the strongest possible terms. I find this state of affairs disturbing. But I note at the outset that I did my best to do the right thing for the consumers', without regard to likely damage to my health, future research program or professional standing.

From
http://www.usdoj.gov/opa/pr/2002/March/02_enrd_140.htm

LANDLORD SENTENCED TO JAIL FOR LYING ABOUT LEAD PAINT HAZARDS

Case Is First Federal Prosecution For Violation Of Lead Hazard Warnings

WASHINGTON, D.C. - A Washington, D.C.-area landlord was sentenced today in U.S. District Court in Greenbelt, Md., to incarceration for two years for obstructing an investigation by the Department of Housing and Urban Development and making false statements to federal officials, in order to conceal his failure to notify tenants of the presence and hazards associated with lead-based paint. .....

"Lead poisoning perils have long been known, and laws exist to protect people – especially children – from being exposed to lead hazards," said Tom Sansonetti, Assistant Attorney General in charge of the Justice Department's Environment and Natural Resources Division. "This case exemplifies our commitment to enforce the federal lead disclosure requirements to protect the public and our children from these unnecessary health risks."

"***This case sends a message to landlords that they have a responsibility to warn their tenants of known lead hazards in their apartments***,"said Thomas M. DiBiagio, United States Attorney for the District of Maryland.

Figure 4. Society has taken failures to warn of possible lead hazards very seriously.

I am not sure if DC WASA received my warning about a serious problem with flushing back in March 2003 or not. On the one hand, they did change their sampling protocol to increase the likelihood of sampling water from the service lateral in summer 2003. On the other hand, in February 2004 I first learned the circumstances of Seema Bhat's termination, and that she was terminated in March 2003. It is possible that I left a voice mail that was never received. In any case, DC WASA we repeated no shows at meetings with me to discuss the lead problem and pinhole leak issues that their customers were experiencing. Thus, I was not surprised when I did not hear a word back from DC WASA.

At the first available opportunity, which was in November 2003, acting as a contractor to the US EPA, I presented and developed a sampling plan that DC WASA could follow to directly examine the effectiveness of flushing in mitigating consumer exposure to lead, as well as to help isolate the source(s) of the problem. I informed WASA's brand new water quality person of the serious pinhole leak problem at WASA, my years of effort trying to get something done about it, and the work I was doing on behalf of property owners. He was fully aware of my work for property owners, which had turned adversarial to DC WASA. I showed him a highly pitted tube taken from the system to illustrate the magnitude of the problem (i.e., Figure 7). I had a very good feeling that this new person (Rich Giani) was going to make excellent progress. He had a sense of urgency about both the pitting and lead problem that had been lacking at DC WASA previously. The first result from my sampling program was sent to me from DC WASA on December 16th (Figure 5). This first sample confirmed my key concern. The peak in lead release was occurring after about 1 minute. Since the analytical methodology was not subject to the same possible errors as my field testing, there could no longer be a doubt about the nature of the problem. However, it was necessary to await more samples to be certain.

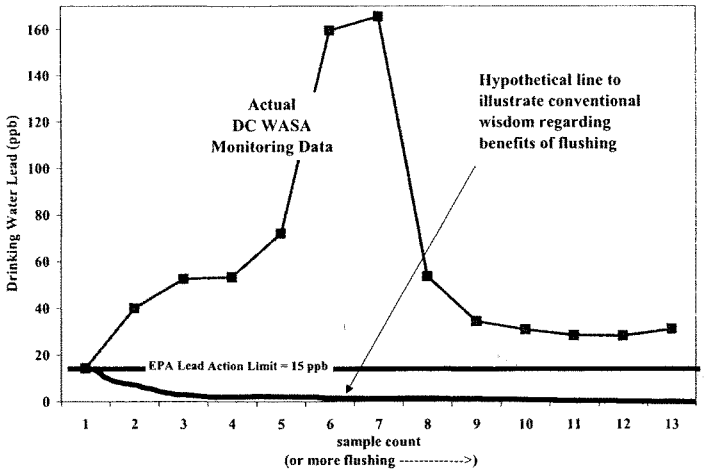


Figure 5. Data sent to me from DC WASA on December 16th from my flushing program. Sample 4 and 5 are at about 1 minute of flushing assuming 2 gpm.

From November until January I conducted considerable unfunded effort on behalf of DC WASA and EPA in relation to the lead issue. I developed a research plan of approximately $110,000 scope for work at Virginia Tech, provided DC WASA with experimental plans, and I freely revealed results of many preliminary experiments we had been conducting to move things along. I hired student researchers at Rich's request to "hit the ground running" for what I was told would be a high priority workload. I was a little perplexed why the data had stopped coming from DC WASA after December 16th, but it was the holidays, and I had no reason to doubt the initiative of Rich Giani.

On or about 1/2/2004, I received a disturbing phone call from Rich Giani delivering an ultimatum. A WASA attorney apparently told Rich Gianni to tell me.....either stop helping property owners in WASA system on copper pitting problem...or you will not be funded to execute the experiments on lead leaching that you yourself designed and had been counting on. I immediately said that I would not abandon property owners regardless of resultant economic hardship and my weeks of unpaid effort for DC WASA. Rich also discussed the sampling data (Figure 5), and his astonishment that the lead never returned to safe levels even after minutes of flushing. I told him the result had confirmed my worst expectation, and reminded him that the flushing advice was likely a problem. Rich expressed his regret that I could not continue to work with DC WASA, since I was obviously the best person for the work, and removing me would set back efforts by weeks if not months. We briefly discussed possible ways around the problem. I then called Brad Taylor (attorney of property owner in WASA system) to see what could be done. Brad did not see a direct conflict of interest, and offered to make any data gathered on my

forthcoming lead work for WASA out of bounds for pending court case on copper pitting, allowing me to continue work on both problems. I left a message for Rich relaying this fact. Rich had said he would call me back with a final decision. He never did.

When I was weighing the factors over in my mind before responding to their ultimatum, I had to consider the following over-riding objectives:

1) my ethical responsibility to property owners afflicted with pitting problems, since WASA and the Washington Aqueduct and EPA had been asked to help for years and they did not do so
2) my ethical responsibility to consumers of drinking water. Specifically, given my extensive research experience in DC and continuous unfunded research at Virginia Tech since May 2003, no other expert was better positioned to oversee the lead work in that system

In making my decision to tell WASA "no way" to the demand that I abandon my work on behalf of DC WASA consumers afflicted with pitting corrosion, a major consideration was that I would have still have oversight of the data collected from my in-home lead monitoring program through my sub-contract with the US EPA. At that point in time I had every reason to believe that I was still the EPA contractor, since I had numerous discussions with Cadmus about finalizing my draft report completed in October and many other tasks.

I first heard of the Washington Post article on lead February 2, 2004. I contacted George Rizzo (Environmental Scientist EPA Region III) by e-mail asking to update my status on the project, and offered to share my unfunded research results on lead with WASA regardless of what they had decided to do with their funding. George did not respond. On February 3, 2004 I first grew suspicious that my anticipated work with Cadmus as EPA sub-contractor was in doubt. I also began to grow more concerned about the flawed flushing advice. Specifically, under public pressure to finally notify the public, DC WASA and EPA were really getting the message out to flush 1 minute (Figure 6).

In my opinion, the public comments were also downplaying the extent of the threat as I understood it, implying that the Washington Post article was overblown, when in fact my own opinion was that no one fully appreciated just how bad things were (Figure 6). However, I had been cut off from all additional data from my monitoring program. I therefore did not have the facts necessary to make a final judgement that the advice to flush 1 minute was truly flawed. DC WASA and US EPA had that data. And they had just hired brand new experts that had to start over again just from scratch, in the midst of what I suspect will become known as one of the greatest public health fiasco's in recent US history. Given numerous statements in the papers and increasing commitment to the flawed 1 minute recommendation, it would be increasingly difficult for DC WASA and EPA to change their public notification, even if they understood that their advice was making lead exposure worse for many consumers.

Figure 6. A sampling of public quotes on flushing, the nature of the problem, and interesting perspectives on how the flushing advice came to be changed.

Are there steps I can take to reduce or eliminate lead in my water?
WASA suggests several steps:
• Flush the water system by allowing water to run for 30 seconds to one minute from taps that have not been used for six hours or more.
Washington Post 2/3/2004

Gerstel and WASA chief engineer Michael Marcotte repeatedly declined to answer questions about whether anyone should avoid consuming the water based upon health concerns. "It is fundamentally safe," said Gerstel.
News 7 2/3/2004

"....residents concerned about lead should flush their water, letting it run for a few minutes before drinking it..."
Johnnie Hemphill Jr 2/5/2004 Common Denominator

"....the good news is that of all environmental problems, this is one of the easiest to address."
Richard Mass 2/4/3004 Washington Post

"Please advise anyone concerned about the possibility of lead in their water supply to follow a simple two-step process. ....run some water through your home system. First, when you get up in the morning or anytime water has been sitting unused for six hours or more, flush the old water out of the system by using some water in the home for showering or bathing. Second, run water from the tap for about one minute before using for cooking or drinking."
Testimony of Glenn Gerstell to DC council 2/9/2004

"We don't want to sensationalize and alarm people, and at the same time we want to get the facts out" Glenn S. Gerstell 2/10/2004 News Channel 8

Mr. Johnson said the agency's low-key response was "out of an abundance of caution and not wanting to cause hysteria."
Jerry Johnson, WASA general manager 2/12/2004

Subsequent events were finally influenced by the fact I told EPA I was going to the DC Council on 2/10/2004.

"If your house has a lead service line to the water main, you may have to flush the water for a longer time, perhaps one minute, before drinking." -- **D.C. Water and Sewer Authority, "An Information Guide on Lead in Drinking Water," September 2003.**
THE ABOVE STATEMENT from WASA now turns out to be incorrect, if the top WASA officials who briefed us yesterday stand by their new position. We learned from them that water should run from the tap for as long as 5 minutes before using it for drinking or cooking if the house and the water main are connected by a lead service line and the taps haven't been used for a number of hours. We note that change in WASA's instructions on this important piece of consumer advice because it illustrates the difficulty many District residents are having in getting straight answers on the recently disclosed problem of lead contamination in their water.
Washington Post 2/14/2004

Marcotte said yesterday that the 10-minute guideline is based on the "worst-case scenario" and is an attempt to err on the side of caution.
Washington Post 2/19/2003

We share your view that WASA could have done more," Donald Welsh, head of EPA's Philadelphia office, testified this week 2/27/2004 Washington Post

"When the dust settles ... it will be determined that we did the appropriate thing to identify an emerging problem and did what we needed to do to arrest that problem," Mr. Johnson said. ...In the latest controversy about lead in some of the city's older pipes, Mr. Johnson said it was actually WASA's voluntary attempts to go beyond its regulatory responsibilities created the confusion Washinton Times 3/2/2004

9

A chronology of some key e-mails are attached in Appendix 1. I first e-mailed one of the experts on February 5th attending the workshop (to be held on Monday, February 9th at WASA) to make sure that the new team would not have to start from scratch (Appendix 1a). On February 8, 2004, I e-mailed a detailed letter to George Rizzo, Cynthia Dougherty and Michael Schock expressing my concern related to EPA handling of lead and pitting issues. My first and foremost point was to remind them that the one minute flushing advice needed to be corrected, and that it was actually worsening consumer exposure to lead in many instances. In that letter I strongly urged that they look at the data from my experiment and, if warranted, publicly rescind the advice. I sent that letter on the 8th to be sure that US EPA and WASA could give that information to all their new experts at the very first meeting. I then received an e-mail from George Rizzo (Appendix 1.c.) that stated "Please be assured that WASA has not disregarded your recommendations and is in the process of revising its advice to customers about flushing their residences." He also expressed surprise that I was upset about no longer being the EPA contractor, since he thought I had voluntarily removed myself. That belief was false.

On February 9th, 2004, I received a phone call from George Rizzo apologizing for the fact I was never notified that I had been removed as the EPA contractor. George reported that a DC WASA attorney had contacted the US EPA sub-contractor, Cadmus, and indicated to them that I had a conflict of interest and could not review any further data on lead leaching that was being gathered in homes of DC WASA consumers. Cadmus (or someone) apparently gave George the impression that I had agreed there was a conflict of interest. Though that impression was false, George had already hired a new contractor. He said "sorry."

Although I was most certainly not happy with these events, I consoled myself with my contributions including: 1) first discovering the serious nature of the problem in March 2003, 2) proving to EPA and DC WASA just how bad the problem was through my sampling program that WASA had followed, 3) assisting DC WASA start-up on their pipe loop testing free of charge, and 4) my help in getting the new experts to the likely cause of the problem (chloramines) through my EPA report of October 2003. Henceforth, I resolved to let other experts handle things (Appendix 1.d), although I was greatly concerned that the new team was (and still is) months and months behind our research team at Virginia Tech in resolving the problem. I did not send the February 8th letter by mail to US EPA although it had already been sent by e-mail.

On the off chance that DC WASA did not publicly rescind the faulty flushing information at the public meeting on the 10th, I did prepare another letter to George Rizzo and Cynthia Dougherty at USEPA. A friend attended the public DC Council meeting. In the middle of the meeting, he phoned me that, incredibly, the 1 minute flushing recommendation had been repeated. In fact, all DC WASA residents would soon receive written notification reiterating the flawed 1 minute recommendation. I was sickened and shocked at the testimony and written notification. The testimony was also restating what I considered to be false assurances that the water was safe (Figure 6). I told my friend to approach a member of the council with a draft copy of my letter to USEPA, he did so, and the copy of that letter was then handed to the council members aide. I then told the US EPA in no uncertain terms what I thought of their oversight of WASA, especially given the assurances I had just been given (Appendix 1.e). I then made it clear that I was approaching the DC Council at that time and was sending the letter to US EPA.

The response of the US EPA is telling (Appendix 1.f). The US EPA said that they were led to believe that DC WASA would send out my flushing recommendations. I then told them what DC WASA had said since the US EPA did not know (Appendix 1.g). Rizzo responded that US EPA did not review the wording they were using, and that regardless of what WASA did, US EPA would post my recommendations on their region III website. I then openly questioned whether that was sufficient notification, since I myself had never even heard of the region III website (Appendix 1.j).

From 2/10 until 2/13 I did my utmost to make sure the DC council was informed of my concerns about the flawed flushing advice (Appendix 1.k). I knew that EPA was finally moving behind the scenes to get WASA to notify the public properly. The council was so busy, that I doubt my intensive efforts had much success. On February 14th, DC WASA finally admitted, in discussion with Washington Post editorial staff, that 1 minute flushing was inadequate (Figure 6). However, they then said that 3 to 5 minutes was recommended, which I also knew was flawed. And the written notifications that their customers were still opening was repeating the wrong 1 minute advice.

Thereafter, I was physically incapable of additional work within the system. I e-mailed all my documentation on the flushing to *Washington Post* reporters on 2/17. An updated flushing recommendation was then published in the Post on 2/19. Council member Carol Swartz asked me to send her a letter on 2/19, and I did so even though I was exhausted. I have attached the part of the letter discussing flushing, in which I once again expressed my recommendation to notify the public (Appendix 1.l). From that time onwards, correct information about flushing slowly leaked out, although even today many of the consumers drinking DC WASA water have not been informed.

Summary

In this section, I detailed some of the actions I took to make sure the public was properly notified. I hereby reiterate my main points and provide a summary. From March 2003 onwards, I had two very urgent concerns in relation to the lead issue at WASA. The first was the potentially flawed flushing advice. The second was the very, very high levels of lead that I had observed in my own sampling. My own data by itself was insufficient to "go public," but it was more than enough for me to begin an intensive research program on the subject with the utmost urgency at Virginia Tech.

The EPA and DC WASA did not initially properly notify the public as to the true nature of the problem. Through the middle of December 2003, I had no reason to believe that this failure was anything other than gaps in scientific understanding and well-intentioned (but wrong) guidance.

After the middle of December 2003, however, I believe that events indicate a much larger problem. Specifically, DC WASA has now publicly stated that results from the sampling plan, developed at my direction in November 2003, made them aware of a very serious problem at that time. To be honest with the public, the "serious problem" was most certainly there since at least March 2003 and probably well before that, but normal EPA sampling for lead did not catch it. It was only because I explicitly told DC WASA how to sample that the nature of the problem was revealed to them. I say this because DC WASA appears to be claiming that this "voluntary" action should somehow be applauded (Figure 6).

Let's examine the public statements of DC WASA on this issue. While I was agonizing over what the data from my sampling plan was showing after mid-December, and was being denied a chance to review the results, what action(s) did DC WASA and US EPA take with that data? I am very curious. Can the US EPA or DC WASA provide any evidence from before 2/5/2004, when I started my own intensive effort to make sure the public and new expert team were properly notified about the problem, that they ever intended to ever tell the public about the faulty guidance? Quite frankly, I currently suspect that without my intensive efforts, only some of which are detailed above, the USEPA and DC WASA would still be publicly stating that the water is completely safe to drink after 1 minute of flushing....even though their own data showed that one minute flushing often caused consumers to drink water with excessive amounts of lead. I truly hope that my current suspicion can be proven wrong.

In the likely event that there is not evidence from before February 5, 2004 that US EPA or DC WASA was planning changes to the flushing guidance, I can provide a rationale reason why they did not do so. It was because no one on the team up to that point had any real expertise on lead leaching issues other than myself, and as of mid-December or early January their attorney had advised them to cut all ties with me. Apparently this attorney felt that one expert could be exchanged for another, with no more resulting delay than changing a battery in a flashlight. Overall, I find no reasonable excuse for the collective conduct of the US EPA or DC WASA in handling this issue.

1.d. Problems with "lead free" brass

There is little doubt in my mind that the most serious problems in the DC WASA system are coming from pure lead pipes. But as I detail in my letter to the US EPA, if the information is correct regarding the lack of a lead service pipe in home 1 (Figure 3), what could be the source? My monitoring data strongly suggested it could be brass.

Section 1417 a.1 of the Safe Drinking Water Act (SDWA) states that "no person may use ...any plumbing in a residential or nonresidential facility providing water for human consumption that is not lead free." Under the definition of the SDWA, "lead free" brass can contain up to 8 percent lead by weight. The US EPA therefore has no authority to ban lead in brass plumbing devices as they did for solders. However, a subsequent agreement states that in addition to having less than 8 percent lead by weight, devices can be required to pass voluntary performance standards. In essence, even though the lead free brass can actually have very high lead, if they pass the voluntary standard NSF International's (NSF) consensus Standard 61, the public can be assured that they will not leach excessive lead to drinking water in practice. Water meters, backflow preventers, corporation stops and other brass devices are known as in-line devices (Figure 1), and they are covered under NSF 61, Section 8. Consumers and utilities are referred to NSF 61 standards when they want to be sure that they are installing safe products (i.e., Figure 2).

As detailed in my February 10 letter to the US EPA, we have recently discovered that NSF 61, Section 8 provides very little real protection to consumers. Due to the way in which the test is conducted, products that leach high amounts of lead in practice could be certified as "safe," when in fact we have little assurance that they are safe. One important implication is that even

new homes might not be safe from lead spikes. While I am not sure the spike I saw in March 2003 (Figure 3) is from brass, we have recently observed similar spikes from NSF 61, Section 8 brass in our laboratory experiments. I am of the opinion that this brass is causing a long term problem with lead in some homes. Unlike the lead solders and lead pipes, brass would perform worst in newer homes, which are not typically sampled under provisions of the EPA Lead and Copper Rule. If these devices were causing a problem, we would not know it.

Congress should consider a ban on such high levels of lead in products used for consumer plumbing. The voluntary standard has not been sufficiently protective in my opinion. It is very perplexing that a product containing 8% lead by weight can be described as "lead free" in the SDWA. For more details, refer to my Feb. 10 letter to US EPA.

2. US EPA Failed to Anticipate and Prepare for a Crisis

In this section I make two points. The first is that attempts were made to alert the US EPA to the likelihood that changes they were requiring in water treatment would cause problems with home plumbing. The second is that lack of research on home plumbing corrosion has left us embarrassingly unprepared for intelligent responses in the current crisis.

2.a. The US EPA Was Told of Approaching Problems

Over the last 10 years, I have been warning the US EPA and the water industry that changes in drinking water treatment practice (such as enhanced coagulation and increasing use of chloramine) can be expected to have serious adverse consequences on home plumbing systems. Problems of pinhole leaks and chloramine attack on leaded brass are among the concerns I have expressed publicly. Others within the US EPA, including Mr. Michael Schock, have shared these concerns and supported my efforts. I have also supported his efforts. My plea for fundamental research funding to study these important problems has gone unheeded; consequently, we do not now have simple answers to even the most basic questions.

It is worth mentioning just a few of my efforts. Two problems are of concern in the current situation, each with severe public health and economic consequences. The as yet unmentioned problem at DC WASA is copper pitting corrosion. Homes served with water from the Washington Aqueduct have some of the most severe cases of hot water pitting corrosion that I have ever seen (Figure 7). In addition to severe economic damages caused to consumers, these leaks can cause growth of mold that is believed by many to be highly toxic. Homes afflicted with mold must often be sold "as is." Consumers who report leaks to their insurance companies oftentimes have their policies cancelled. I have personally met some residents who have lost their homes as a result of leaking pipes, and who believe that they have been permanently impaired by residual problems from the mold.

Alarmed by increasing levels of pinhole leak activity impacting their customers (also served Potomac water), WSSC sent a letter with a request for help to Christie Whitman (Appendix 2). Ms. Whitman directed the US EPA Office of Drinking Water to meet with myself and other individuals on April 18, 2003. Mr. George Rizzo had been instrumental in trying to convince the US EPA to anticipate some of these problems and he also attended. A few slides from my presentation that day are attached (Figure 8).

Figure 7. Copper pipe attacked with pinholes leaks from WASA system. Each clamp is covering an individual leak (Above). Picture of damages and mold growing in a DC home afflicted with pinholes (Below).

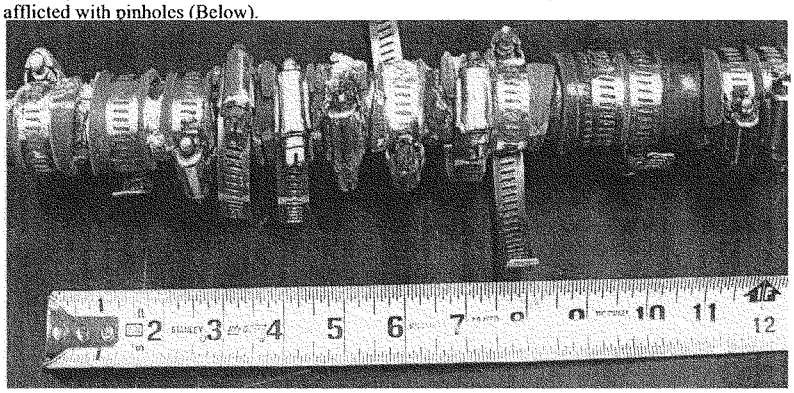
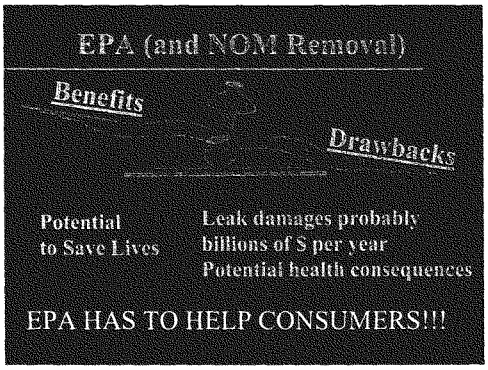
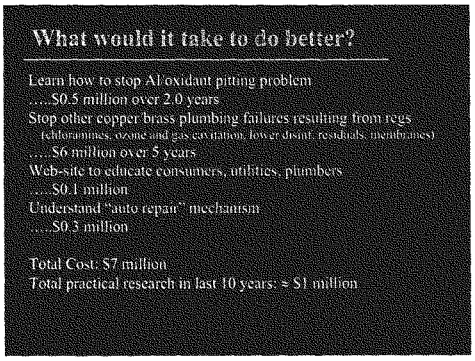
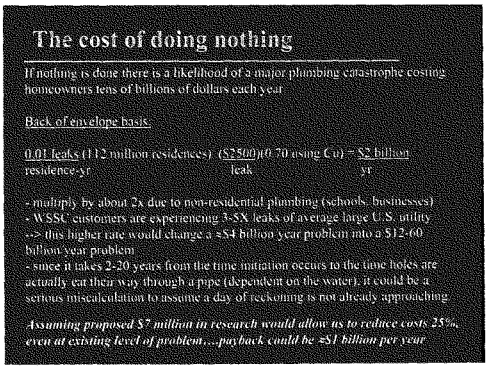


Figure 8. Some key slides from my presentation to EPA Office of Drinking Water.







In that presentation, I made the following points. First, given what I was seeing in the DC WASA system, these corrosion problems were not just costly, they were also causing severe public health problems. I pleaded with the US EPA to help consumers (Figure 8). I mentioned not only mold and pitting, which was the focus of the discussion, but also the lead in DC which I strongly believed at that time was caused by the switch from chloramine. I proposed a research plan of $7 million dollars scope to investigate a few of the most urgent issues, and I ended the presentation with the following strong language (Figure 8):

"If nothing is done, there is a likelihood of a major plumbing catastrophe costing homeowners tens of billions of dollars each year.....it could be a serious miscalculation to assume a day of reckoning is not approaching."

When I had brought forth my warnings about increasing likelihood of pinhole leaks back in 1994, I was told the US EPA would wait and see. In 2003 the US EPA had the same attitude, even though we had very strong (but not yet conclusive evidence) that the water chemistry was the cause of the problems. Nothing at all came of the April meeting. Part of this is due to the fact that lead and other corrosion problems are given lower status at US EPA by definition. Historically, all such problems and costs have been borne by consumers, even though they have no control over the corrosivity of the water that is causng the problem by eating away at their plumbing.

In a recent experiments at Virginia Tech, after years of getting closer, we have now succeeded in conclusively demonstrating that pinhole leaks are exacerbated by changes in treatment. My concerns are no longer a theory, but they are a scientific fact. Likewise, we have now proven that chloramines can trigger lead release from brass and lead (Figure 9). Furthermore, in the DC WASA system, I now believe that the two problems are caused by the same factors. That is, our research that discovered the causes of pitting also partly explain why chloramine has caused such a serious problem with lead leaching.

Chuck Murray from WSSC was also at the April meeting with the US EPA at their national headquarters. He gave very clear notice that the US EPA regulations were really offering utilities little choice but to switch to chloramines. He asked the EPA, in light of the DC results, whether it would not be a good idea to slow things down and get an handle on these corrosion problems, instead of leaping ahead into the unknown without understanding what we were getting into. He further mentioned that WSSC is, against its own preferences, preparing to use chloramines despite years of experience and success with free chlorine. His comments had no effect. I think the Government Reform Committee would be stunned to learn of the number of cities switching to chloramines from free chlorine in recent months.

The time has come for the US EPA to explicitly consider weigh these known adverse consequences against possible "benefits" of regulations such as those governing disinfection by-productions (Figure 8). I note that the suspected benefits of such regulations, based on sound science, are not yet proven beyond a reasonable doubt. In contrast, the adverse consequences that I have been warning of years are now are proven beyond a reasonable doubt to my satisfaction. With the gaps in monitoring, we would not know if there was a serious problem with lead leaching or toxic mold in those systems even if it were occuring. Utilities are not currently required to monitor for such problems at the time the changes are made, nor are they required to use a rigorous protocol like I developed to collect the data in Figure 3 and Figure 5.

2.a. The US EPA is embarrassingly unprepared to deal with these issues

Scientific understanding follows investments in research funding. The reality is that our scientific understanding of these problems is not sufficient to support intelligent decision-making. Researchers such as myself have been forced to study these problems largely as a hobby in recent years. For instance, more than one half of my 13 years research on copper pitting corrosion and nearly all my work on chloramine attack on lead has been funded by donations to the Virginia Tech Foundation. Another quarter of that research was funded from my own pocket, and the experiments were done in a room in my own house. The National Science Foundation, WSSC and the Copper Development Association have recently been very supportive with funding, and our recent breakthrough understanding on pitting corrosion is largely attributed to that investment. I have never received any funding for corrosion research from the US EPA. All of my efforts at DC WASA have also been completely uncompensated, including 6 months of my own effort, funding of two graduate students doing the research on chloramines, and expenses for supplies. Needless to say, I am proud of what my team has accomplished through today under very adverse circumstances.

I have already described the serious lead problem that was uncovered only through my own sampling initiative in homes of DC WASA consumers. Is that not a troubling state of affairs? I mentioned our recent discovery that new brass products, previously thought to be safe, have been shown to cause problems with lead even in new homes. But there is an even longer list of questions that we have not even started to address.

For example, we have recently discovered that, in the presence of chloramines, dosing of orthophosphate may trigger higher lead release from some types of brass. I mention this because orthophosphate is a likely solution to be tested in parts of the DC WASA system. Also, I am working with residents and a utility in Maui, Hawaii, where an EPA recommendation to dose phosphates to the water actually increased lead release. The experience of Maui (which uses chloramines) may provide yet another point of data confirming our laboratory results.

I point out that EPA is not even sure of the simplest things, such as the whether the required partial replacement of lead service laterals is actually beneficial or not. According to our experimental results in November 2003, the lead in water at DC WASA is being driven by a galvanic (battery) reaction between copper:lead or copper:brass. Replacing old lead with fresh copper, and connecting the fresh copper to the consumers lead pipe, would therefore be expected to make lead release much worse that it was before. Personally, I am appalled that we do not even know if the expensive partial lead service line replacement program is beneficial. In simple terms, DC WASA might very well spend $351 million to finish the job of partial lead service line replacement, leaving behind a much worse problem for consumers that if they had done nothing at all. In my letter on this subject written February 19th to the new expert team that is starting at DC WASA, I stated the following about our results at Virginia Tech:

"We have proven ..that not only does chloramine worsen galvanic corrosion between brass/copper or lead/copper, but it also increases the amount of lead leached to the water when

the metals are coupled. Our findings…raise a host of problems as I mentioned yesterday. Specifically, replacing a half a lead service with copper is going to dramatically worsen the galvanic corrosion between copper and lead. Such partial replacements should be stopped immediately....."

I will point out that a term has even been coined to explain the finding that lead in drinking water is often much higher after meeting the letter of the law and replacing part of the service lateral. It is called "the partial replacement phenomena." Incredibly, because the law says to replace lead services, they will continue to do so even though their own data often shows they are making the problem worse. Some of the lead levels reported to me (second hand) in homes after such partial replacements are truly stunning, and are as high as 48,000 ppb if my source is accurate. Does the law require that we suspend common sense?

Let us be honest about what is happening here. We are learning hard lessons about corrosion control in full scale testing of real systems, while consumers are drinking the water and getting continual reassurance that everything is under control. In my opinion the situation is not under control by any rational measure.

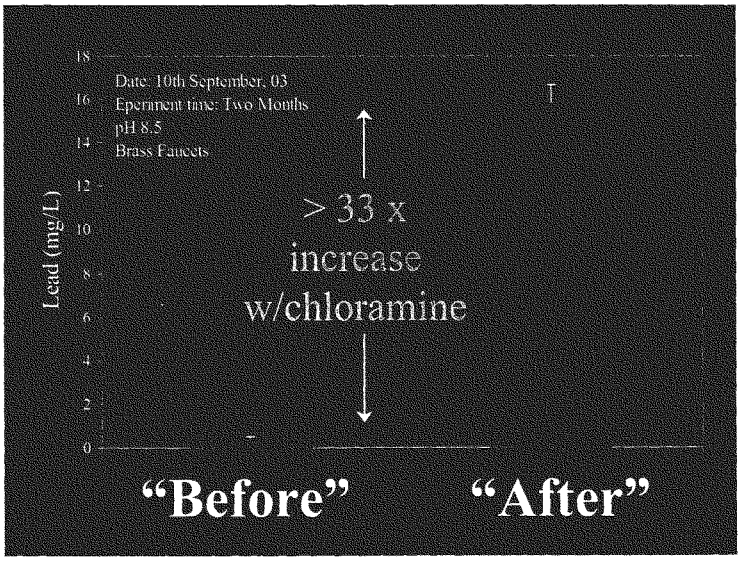


Figure 9. Experimental data proving the adverse consequences of chloramines on lead leaching from certain types of brass. "Before" is simulated WASA water with free chlorine. "After" is the same water with chloramine.

In closing, this is a problem of great urgency and importance. Government reform is most certainly needed. I do not believe that the US EPA has the capability to change its culture from within, even in the midst of an embarrassing crisis, since they have invested so much into DBP regulations to admit that a mistake might have been made. The US EPA must be forced to change externally. I also urge that additional funding be given to the National Science Foundation so that researchers can answer the practical questions that consumers have. Without such an initiative we are destined to repeat the mistakes of the current crisis, learning of problems years after they have started, as opposed to anticipating and preventing such problems in the first place through application of sound science.

Sincerely yours,

Marc Edwards
Professor of Civil and Environmental Engineering
Virginia Tech

Appendix 1. Some e-mails detailing chronology of events regarding some of my efforts to make sure public was notified on flawed flushing advice.

a. From e-mail from Marc Edwards to Mike Schock, and EPA Scientist attending first expert meeting on 2/5/2004

The reason I sent this data, is in the unlikely event that WASA does not share it with you, you will know that flushing is not going to be protective of public health.

b. Response from Mike Schock

05:10 PM 2/5/2004 -0500
thanks. I think I'll eventually get it. It looks like I'll be flying to DC for an emergency meeting on Monday morning. I was on a call with Rich Giani who discussed a pretty complete research plan, most of which he credited to you,

c. E-mail from Marc Edwards to George Rizzo. 2/8/2004 2:55 am

George and Mike,
Attached is a letter that will be mailed Monday by Fed Ex to Cynthia.
I will also send both of you a copy of this via normal mail.
Please forward this to Cynthia.
Perhaps she would appreciate advance notification of its arrival.
I do not have her e-mail address.
Marc Edwards
Professor
Virginia Tech

c. E-mail response from George

Date: Sun, 08 Feb 2004 17:42:57 -0500
From: [redacted]
Subject: Re:
To: Marc Edwards <[redacted]
X-Mailer: Lotus Notes Release 5.0.9a January 7, 2002
X-MIMETrack: Serialize by Router on EPAHUB11/USEPA/US(Release 6.0.2CF1|June 9, 2003) at 02/08/2004 05:42:59 PM
X-Junkmail-Status: score=6/50, host=zidane.cc.vt.edu

Marc,
I received your message today because I was in the office. I forwarded your message to Cynthia but I would like to ask you not to formally send the letter until we have a chance to speak. I will be in DC tomorrow at a meeting at the Washington Aqueduct concerning the lead issues in DC. Mike Schock will also be there. I will call you as soon as I can tomorrow. My cell phone number is [redacted] in case you don't hear

from me. Please be assured that WASA has not disregarded your recommendations and is in the process of revising its advice to customers about flushing their residences.
Also, I did not ignore your last e-mail from February 2, 2004. I have been very busy since the news stories were published last weekend and did not have a chance to answer your e-mail and several more. Also, I thought that you had agreed with Cadmus that there might be a potential conflict of interest if you continued as their sub-contractor while consulting for plaintiffs in a lawsuit against WASA.
Thanks.
George

d. Response to Rizzo

Date: Mon, 09 Feb 2004 13:40:27 -0500
To: [redacted]
From: Marc Edwards [redacted]
Subject: Re:

After further considering your e-mail below and my first response(s), I'll note the following.

I was much relieved to hear that WASA is revising its advice to customers.
I am certain that you have a highly qualified team working on this, and that they will keep the public health interest foremost in their mind.
If EPA has determined that I have an actual conflict of interest, I do not agree with that determination, but I will not object further at this time.

At present, I am satisfied that Cynthia, you and Mike have read my concerns, and I am glad that I had a chance to bring you up to date regarding my activities. Consequently, given your affirmative response in relation to the forthcoming revision of WASA advice on flushing, I do not intend to mail the letter today as I had originally planned.

If EPA or WASA wants to learn of our experimental results on chloramine impacts in relation to lead leaching at DC, if asked, then I would find a way to share those results with the team.

Best wishes on your future work on this issue.
I understand that you have quite a task before you.

Marc

e. E-mail to Rizzo after DC WASA officials reiterated 1 minute flushing recommendation to the DC Council

Date: Tue, 10 Feb 2004 17:38:03 -0500
To: [redacted]
From: Marc Edwards [redacted]

George,

According to a report I got from someone attending the meeting today, DC WASA is still recommending 1 minute flushing to achieve acceptable levels of lead in the drinking water.

Who is advising them? Who is advising you? ***This is totally, and I mean totally, unacceptable in terms of protecting public health.*** I am dumbfounded at this given the data I have seen, and given the reassurance I had from you just yesterday that a revised flushing recommendation would be forthcoming.

Have you seen the data from my monitoring experiments that DC WASA collected? It shows lead rising up to at least 5X first draw levels in this recommended timeframe. Do you understand that their advice is increasing lead exposure dramatically in some cases versus first draw?

Please alert Cynthia that my letter has been mailed UPS next day.
EPA has totally abandoned their regulatory responsibilities in protecting health of consumers in the DC area.

Also tell Cynthia that I intend to speak with some members of the DC council.

Perhaps everyone is right...that not letting this rest, and refusing to play along will be the end of my academic and scientific career...in all likelihood it is my final deathnell for potential funding agencies in the drinking water "research" community. But the drinking water community that I signed onto would never allow a breach like this to occur. I have tried and tried and tried to work within the system, but as I said previously, I am now convinced that the system is completely broken.

What is happening here is wrong by every rationale measure. I cannot believe you did nothing after my earlier letter by e-mail.

Marc Edwards

f. E-mail back from George Rizzo

Date: Wed, 11 Feb 2004 09:16:31 -0500
From: [redacted]
Subject: Re:

Marc,
I didn't see your e-mail until this morning. EPA's understanding with WASA is that they have revised their advice to customers regarding flushing their taps to take into account the problem with the lead service lines. They will be sending out letters with this advice to their customers today. I'm assuming that you were referring to the DC Council meeting held yesterday. Region III did not attend this meeting because they had to be at a Congressional meeting yesterday, so I haven't heard what WASA stated at the Council meeting. As soon as I receive a copy of the letter, I'll forward it to you.
George

g. Response to Rizzo

Date: Wed, 11 Feb 2004 11:32:22 -0500
To: [redacted]
From: Marc Edwards [redacted]
Subject: Re:

According to my source in attendance, they passed around a sheet saying 1 minute flush was sufficient to ensure safe water.
According to my source, there was nothing on the written sheet saying that there was a problem with flushing.

A woman asked the question (I am paraphrasing what I was told second hand) "Why is lead in my second draw higher than my first draw."
My source said Marcotte then answered something like...you are probably detecting lead from water that sat stagnant in the service lateral. In those cases you should be flushing 3 to 5 minutes.

The written advice passed around, and which I was told would be sent to WASA customers, according to the person who was in attendance and who read it to me over the phone at 3:45 pm, did not say that there was a potential problem with flushing. If his message was correct, in my opinion, it falsely reassured the council that there is not a problem with the existing flushing recommendation.

At that point I felt I had no choice but to send you and Cynthia the letter.

It is my understanding that many people do not even know if they have a lead service line. Therefore, how on earth can they know whether to flush for 30 seconds, 1 minute, 3 minutes or 5 minutes to ensure they drink water with safe levels of lead? Is the lead returning to safe levels even after extended flushing? The data I have seen so far says the answer is no.

Marc

h. Rizzo to Edwards

Date: Wed, 11 Feb 2004 15:23:40 -0500
From: [redacted]
Subject: Re:
To: Marc Edwards [redacted]
Cc: [redacted]

Marc,
I have not been directly involved in reviewing the language that WASA proposed for providing advice to consumers. It is my understanding that for residents of homes with lead service lines, the advice for consumers would be that the lead levels are significantly reduced after heavy household water usage. Therefore, they recommend that after water has been used for bathing, etc. in the morning, residents could draw containers of water for consumption throughout the rest of the day and evening. This process would then be repeated the next day. WASA determined this recommendation after conducting several lead profiles at DC residences. We are trying to determine what WASA has sent, or will send, to consumers. I believe that Region III will post this recommendation on our web site regardless of what WASA does.

George

i. Edwards to Rizzo
Date: Wed, 11 Feb 2004 14:39:53 -0500
To: [redacted]
From: Marc Edwards [redacted]
Subject: Re:

On Fox news last night, sources tell me that WASA said "after 1 minute flushing" the water is completely safe.

According to the person I had attend the meeting, the take home message that the council got is "1 minute flushing." Marcotte apparently responded maybe 3-5 minute flushing to make it completely safe in response to the woman that raised the concern that 2nd draw is higher than first draw.

The page handed out at the council meeting says:

"Please advise anyone concerned about the possibility of lead in their water supply to follow a simple two-step process.....First, when you get up in the morning or anytime water has been sitting unused for six hours or more, flush the old water out of the system by using some water in the home for showering or bathing. Second, run water from the tap for about one minute before using for cooking or drinking."

The data I just sent you shows that less than 6 hours is still a problem, or at least that it most certainly was a problem for 1 home back in March, 2003, and most likely was a problem for many homes in DC. Does WASA now have data proving that less than 6 hours is not a problem? In addition, why is the statement addressed to only "....anyone concerned about the possibility of lead in their water." Who on earth should not be concerned? Why wasn't an explicit message being sent to everybody?

Marc

j. Edwards to Rizzo.

Date: Wed, 11 Feb 2004 15:35:33 -0500
To: [redacted]
From: Marc Edwards [redacted]
Subject: Re:

But what on earth will prompt consumers to go to the region III web-site?
What has more reach....Fox News, the mailing that WASA is sending out....or the EPA regional web-site?

Where is the region III web-site...I have never even seen it.

Marc

k. Last e-mail to DC Council to try and get public notification.

Date: Fri, 13 Feb 2004 09:44:03 -0500
To: "Maier, Adam (COUNCIL)" [redacted]
From: Marc Edwards [redacted]
Subject: RE:

I can meet anytime before Feb. 19th.
I am in Maui from Feb. 20 until March 4th...partly working with residents and a utility who have a serious lead problem that might be caused by..surprise....chloramine/phosphate addition to their water. Also...my first vacation in two years.

I could speak with anyone, anytime by phone if desired except for some of the time I am in Hawaii...although I must say that I am starting to wonder if I have full control of my mental abilities given the stress of the past few months.

Adam...I am desperately concerned that the advice on flushing should be publicly changed to what was agreed to with the EPA, and that the public be informed in a manner that is not watered down. In my personal visits to the homes of these people, I can tell you that those bearing the brunt of this are the proud working poor of Washington DC. They are too busy to read the notices sent out in the water bill, much less read between the lines of the garbled messages that have been given to the public regarding benefits of 1 minute flushing to date. 1 minute flushing is not making the water safe, and in many cases, it is making the problem much worse. I was literally sickened when WASA management went before the Council and re-iterated the 1 minute flush recommendation after everything I had done to bring a serious problem to their attention and to the attention of the USEPA.

Short of calling the Post and letting them quote me "Don't drink the water," I have done everything I possibly could.
I will not go to the Post and say that.
If I did that, people will lose faith in the entire system, including DC government, which is truly the last hope for reasonable action.

Marc

I. Part of Letter to Council Member Carol Swartz

February 19, 2004

Dear Ms. Schwartz,

Thank you for efforts to force a rational solution to the problem of excessive lead in drinking water of DC WASA consumers. I am told that you now have a copy of my letters mailed February 7th and February 10th to representatives of the United States Environmental Protection Agency (USEPA). Those letters detail my frustration and concern regarding the way in which this situation has been handled. I exhausted every opportunity to work within the system before approaching your representatives and the *Washington Post* starting February 9th, 2004.

In addition to comments in my letter to the USEPA, I am providing additional advice that your committee may wish to consider at this time.

1) Public notification that this is not a "normal" problem with lead in drinking water.

The early advice to flush for 0.5-1 minute before collecting water to be used for cooking or drinking was provided with the best of intentions. However, samples that I personally collected from DC WASA homes, and samples that DC WASA later collected at my direction in December 2003, proved that there is a problem with that advice. Recent advice to flush 10 minutes before collecting water to be used for drinking or cooking throughout the day, or to treat water with a device known to remove lead, is consistent with my current understanding of the situation. This advice is now expressed in today's *Washington Post* and on the EPA Region III web-site.

Unfortunately, the written public notification sent out by DC WASA and testimony given to the Committee on Public Works and the Environment (both February 9th) repeated the 1 minute flushing recommendation. That spurred me to a round the clock effort, without regard to either my personal health or possible damage to my professional standing, to make sure that consumers' were provided information that will allow them to avoid exposure to excessive lead in their drinking water. In my opinion, posting the new flushing recommendation on the EPA Region III web-site and the article in today's *Washington Post* does not adequately inform the public of this important new advice.

Appendix 2. Copy of letter to Christie Whitman from WSSC requesting help

The Honorable Christie Whitman
Administrator
United States Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Administrator Whitman:

It has been a privilege to partner with the United States Environmental Protection Agency (EPA) on several public events to highlight your efforts to ensure the health of citizens across the country and safeguard the nation's water supplies. A new issue, which was initially perceived to be an isolated local event, is quickly escalating into a national problem impacting citizens and water utilities across the nation -- presenting another opportunity for us to partner. Let me take this opportunity to update you on the problem of copper pipe pinhole leaks.

Since summer 2000, the Washington Suburban Sanitary Commission (WSSC) has been aggressively working to determine the cause of copper pipe pinhole leaks impacting families from throughout our service area of Montgomery and Prince George's Counties, Maryland. To date, more than 4,500 customers have reported these leaks to us by completing our pinhole leak questionnaire (available on our website at www.wsscwater.com). These leaks can cause considerable damage resulting in costly repairs, mold problems, increased insurance rates, and, in some cases, customers having their insurance policies cancelled.

Working closely with the Copper Development Association, master plumbers, local officials and nationally recognized water quality and/or copper corrosion experts including Dr. Marc Edwards of Virginia Tech, we've been able to discount many factors as the primary causes of pinhole leaks in our service area. Unfortunately, despite our best efforts, we will probably never know the exact cause of pinhole leaks impacting WSSC customers.

However, recent research conducted by Dr. Edwards indicates that EPA requirements related to corrosion control (Lead and Copper Rule) and the removal of natural organic matter (NOM), coupled with best industry practices, may promote copper pipe pinhole leaks. As you may know, corrosion experts now believe that some of the chemicals making up the NOM act as corrosion inhibitors and protect metal piping.

Similar kinds of copper pipe pinhole leaks are occurring elsewhere in Maryland – areas not served by WSSC – and across the nation. In fact, Dr. Edwards has indicated that he receives calls every day from utilities and consumers across the country. He estimates he has heard of a different impacted system every three days for the last few weeks and he strongly suspects the problem is getting worse nationally.

Page Two

In light of Dr. Edwards' latest research indicating federal water chemistry regulations may play a role in this problem, we strongly encourage EPA's involvement in this national issue. Mr. George Rizzo from your Region 3 Office attended our recent taskforce meeting at which Dr. Edwards presented his latest work and indicated he would consider the information discussed at that session. However, we feel a strong sense of urgency to meet with appropriate staff members from your Washington, D.C. office to brief them on this groundbreaking work.

Please contact me at [redacted] with any questions or comments you may have. Additionally, we would greatly appreciate your suggestion of appropriate officials with whom we should meet to discuss EPA's interest in this national issue. Thank you for your time, consideration and your continued support of our mission to provide safe water to our customers and return clean water to our environment.

Sincerely,

John R. Griffin
General Manager

cc: The Honorable Douglas M. Duncan
The Honorable Jack Johnson
The Honorable Barbara A. Mikulski
The Honorable Constance A. Morella
The Honorable Paul S. Sarbanes
The Honorable Chris Van Hollen
The Honorable Albert R. Wynn
Montgomery County Delegation Members
Prince George's County Delegation Members
Montgomery County Councilmembers
Prince George's County Councilmembers

bcc: Sherry Conway Appel
Commissioners
Austin Freeman
Ken Geremia
Monica Johnson
Andrew G. Kireta, Jr.
Joel Kramer
David Lake
Keith Levchenko
Dale L. Powell
Billy Silk
Paivi Spoon
Senior Leadership Team

The Pinhole Leaks Issue

Marc Edwards

VirginiaTech
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Overview

-Obvious Costs
-Insurance Issues
-Is it covered?
-Insurance Companies in a Bind
-Losses and the Toxic Mold Issue
-Changing Perception about Pinholes

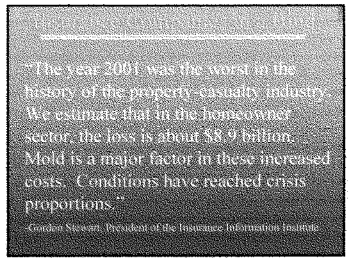
-Most cause of replacement = pipe
$100 - 2,000
-Replace the entire plumbing system (after two leaks)
$4,000 - 9,000
-Resulting water damage
-easily greater than $20,000

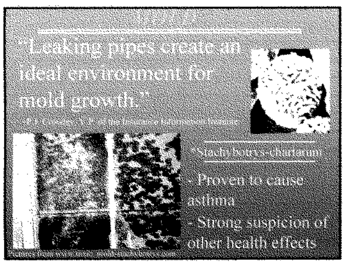
Yes →
Sudden and accidental occurrence
--Frozen and burst pipes
No →
Home maintenance
--Most common

- The threat of non-renewal
- Forced into high-risk insurance
- Lowered house value disclosure

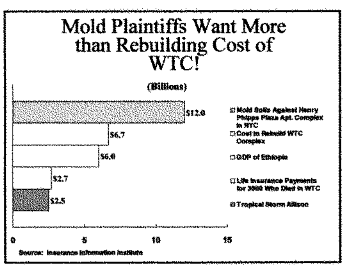
Actual cost = reported insurance costs
x
correction factor for under-reporting
x
correction factor for uncovered claims

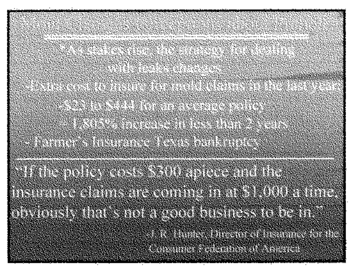

Water damage claims from frozen and broken pipes rank #2 behind hurricanes in terms of both the number of homes damaged and the amount of claim costs in the U.S.


"The year 2001 was the worst in the history of the property-casualty industry. We estimate that in the homeowner sector, the loss is about $8.9 billion. Mold is a major factor in these increased costs. Conditions have reached crisis proportions."
-Gordon Stewart, President of the Insurance Information Institute


"Leaking pipes create an ideal environment for mold growth."
*Stachybotrys-chartarum
- Proven to cause asthma
- Strong suspicion of other health effects


Erin Brockovich
www.erinbrockovich.com
In Texas, Melinda Ballard won a $32 million dollar lawsuit
"...alleged neglect of a water damage claim... by the Farmer's Insurance Group Company..."


Mold Plaintiffs Want More than Rebuilding Cost of WTC!
(Billions)
$12.0
$6.7
$6.0
$2.7
$2.5
Mold Suits Against Henry Phipps Plaza Apt. Complex in NYC
Cost to Rebuild WTC Complex
GDP of Ethiopia
Life Insurance Payments for 3000 Who Died in WTC
Tropical Storm Allison
0
5
10
15
Source: Insurance Information Institute


*As stakes rise, the strategy for dealing with leaks changes
-Extra cost to insure for mold claims in the last year
-$23 to $444 for an average policy
= 1,805% increase in less than 2 years
- Farmer's Insurance Texas bankruptcy
"If the policy costs $300 apiece and the insurance claims are coming in at $1,000 a time, obviously that's not a good business to be in."
-J. R. Hunter, Director of Insurance for the Consumer Federation of America

uncovered damage...... $300
replumb....................$5600
higher insurance.......$500/year
Lost property value (as is sale)
..........................>$20,000
Health............Believed significant
Stress.......lost family and home
Total $26,400**

Public Pipe	vs	Pitting
$0.6 trillion value		> 0.6 trillion in Cu pipe
Shared Burden		Homeowner
Can predict		Cannot predict
WIN Lobby		No advocate
Government assist		Homeowner
Professional oversight		Consumer
$0.5-7K in 30 yr		up to >26K** in 3 yr

..and repair of mains is probably one of the least appreciated problems in the US

Simple Review of the Science

- Define Terms
- What We Know
- Previous Work on Initiation
- Role of NOM

Initiation and Propagation

Initiation: The pit starts
(no true understanding)

Propagation: How the pit grows
(some understanding)

Initiation

Accepted initiation factors -->

Carbon films, flux, half filled tubes

Pit Initiation Step		Waters
Used as is		Type I, pH 7.2
Remove Carbon		Low alkalinity
Flux	X	High chloride
Add Carbon films		Low sulfate
Flux & Carbon		pH 6.8
Films		pH 7.8

Exposure with and w/o stagnation, half-filled tubes
108 different tests, 18 months then

Inability to initiate pits has been the barrier to improved understanding

- Who should fund research?
- Can not research a problem that is not reproducible

More than 50 other unfunded tests designed to initiate pits over the last 10 years

Nothing!

Current Theory

Copper + Suitable Pipe | Water

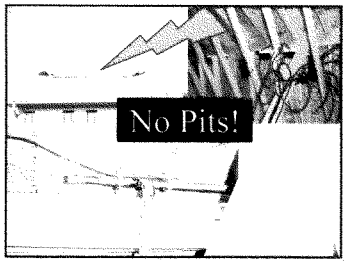
A miracle occurs (initiation)

Critical time passes (propagation) weeks to decades

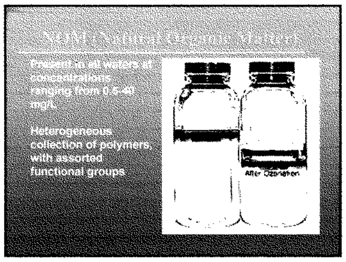
Pinhole Leak

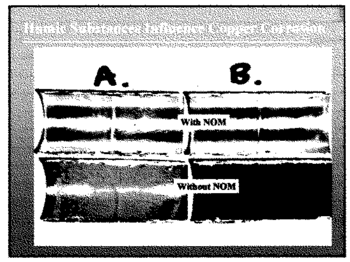
Candidate "miracles"

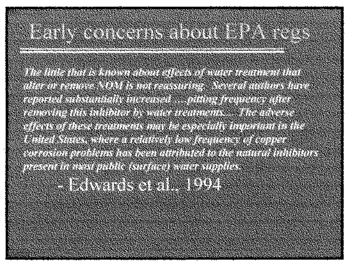
Chlorine
Sulfides
Flux
AUCL
Others

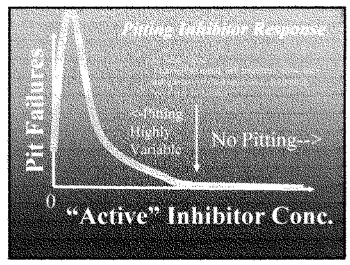


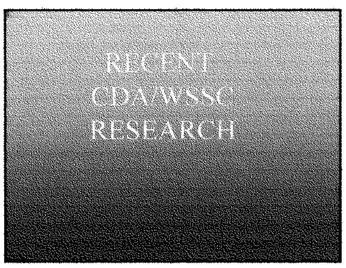
It has been known for more than 50 years that NOM can stop initiation or propagation
(Hector Campbell)

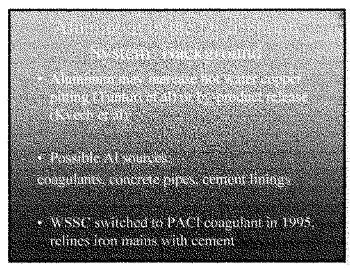

NOM (Natural Organic Matter)
Present in all waters at concentrations ranging from 0.5-40 mg/L.
Heterogeneous collection of polymers, with assorted functional groups
After Ozonation


Humic Substances Influence Copper Corrosion
A.
B.
With NOM
Without NOM


Early concerns about EPA regs
The little that is known about effects of water treatment that alter or remove NOM is not reassuring. Several authors have reported substantially increased ... pitting frequency after removing this inhibitor by water treatments... The adverse effects of these treatments may be especially important in the United States, where a relatively low frequency of copper corrosion problems has been attributed to the natural inhibitors present in most public (surface) water supplies.
- Edwards et al., 1994


Pitting Inhibitor Response
Pit Failures
<-Pitting Highly Variable
No Pitting-->
0
"Active" Inhibitor Conc.

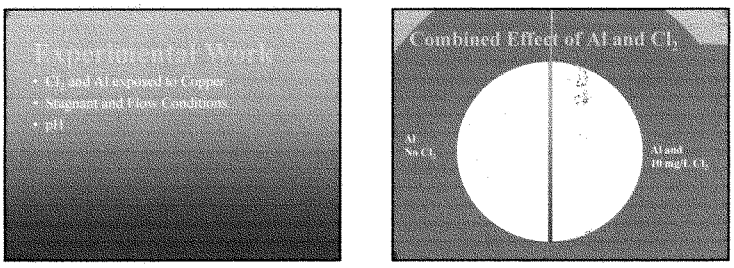

RECENT CDA/WSSC RESEARCH

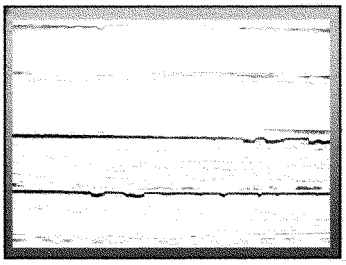

Aluminum in the Distribution System: Background
• Aluminum may increase hot water copper pitting (Tunturi et al) or by-product release (Kvech et al)
• Possible Al sources:
coagulants, concrete pipes, cement linings
• WSSC switched to PACl coagulant in 1995, relines iron mains with cement

- Cement based materials leach Al to the water at WSSC
- Commonly measured > 50 ug/L Al leached to water from relined pipes
- Aluminum solids found on all copper pipe at WSSC--pitting and nonpitting
- Aluminum alone not the cause….

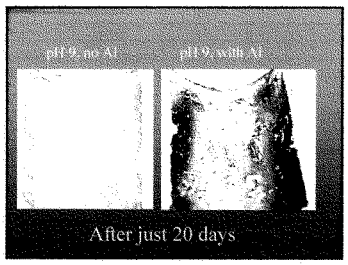
- Powerful Oxidant
- Some Have Shown Link With Pitting (Fujii et al; Atlas et al)

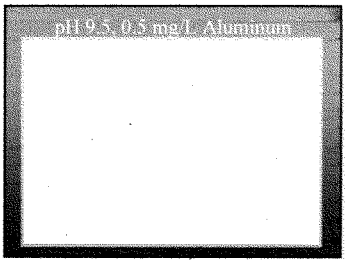
- Cl_2 and Al exposed to Copper
- Stagnant and Flow Conditions
- pH

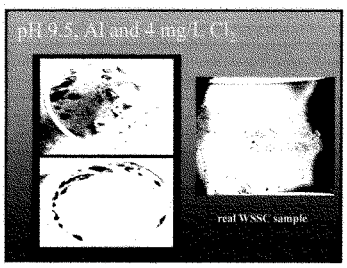


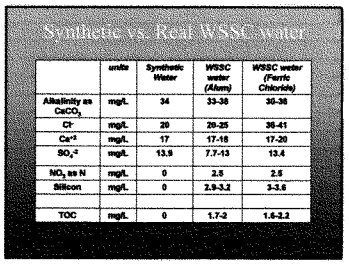


pH 9 under continuous flow…..

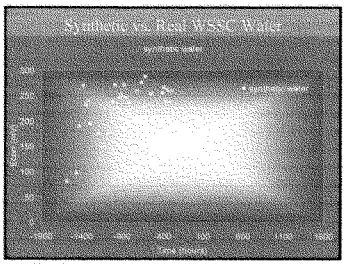


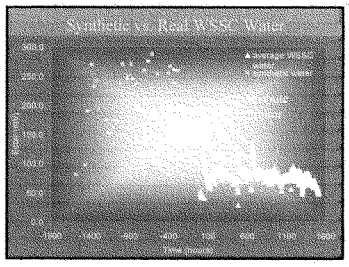


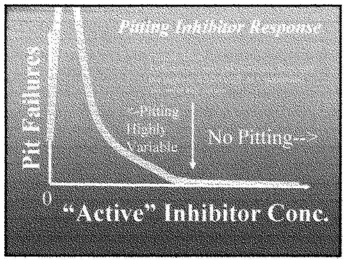


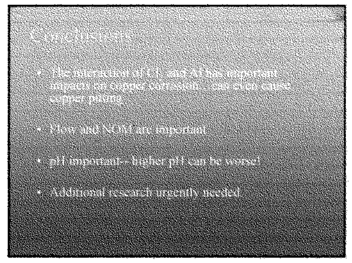


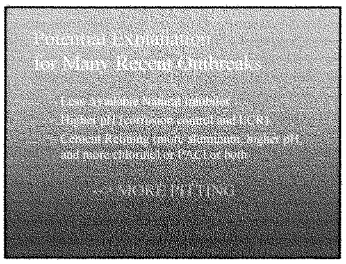
	units	Synthetic Water	WSSC water (Alum)	WSSC water (Ferric Chloride)
Alkalinity as $CaCO_3$	mg/L	34	33-38	36-38
Cl^-	mg/L	20	20-25	36-41
Ca^{+2}	mg/L	17	17-18	17-20
SO_4^{-2}	mg/L	13.9	7.7-13	13.4
NO_3 as N	mg/L	0	2.5	2.5
Silicon	mg/L	0	2.9-3.2	3-3.6
TOC	mg/L	0	1.7-2	1.6-2.2

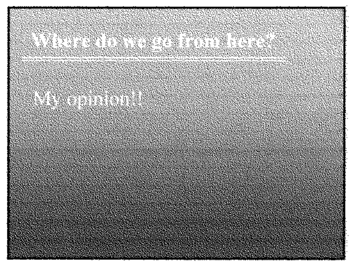


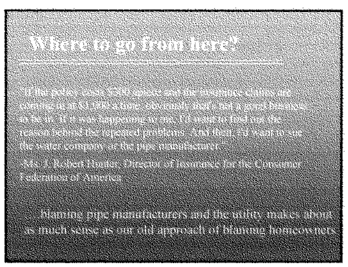


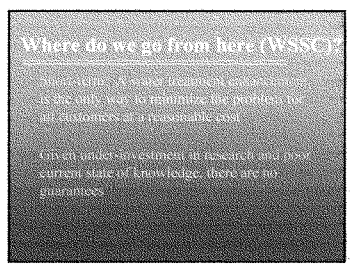

Pitting Inhibitor Response
Pit Failures
<--Pitting Highly Variable
No Pitting-->
0
"Active" Inhibitor Conc.


Conclusions
• The interaction of Cl- and Al has important impacts on copper corrosion…can even cause copper pitting
• Flow and NOM are important
• pH important-- higher pH can be worse!
• Additional research urgently needed


Potential Explanation for Many Recent Outbreaks
– Less Available Natural Inhibitor
– Higher pH (corrosion control and LCR)
– Cement Relining (more aluminum, higher pH, and more chlorine) or PACl or both
--> MORE PITTING


Where do we go from here?
My opinion!!


Where to go from here?
"If the policy costs $500 apiece and the insurance claims are coming in at $1,000 a time, obviously that's not a good business to be in. If it was happening to me, I'd want to find out the reason behind the repeated problems. And then, I'd want to sue the water company or the pipe manufacturer."
-Mr. J. Robert Hunter, Director of Insurance for the Consumer Federation of America
…blaming pipe manufacturers and the utility makes about as much sense as our old approach of blaming homeowners


Where do we go from here (WSSC)?
Short-term – A water treatment enhancement is the only way to minimize the problem for all customers at a reasonable cost
Given under-investment in research and poor current state of knowledge, there are no guarantees

Most utilities do not know:

- their customers have problems
- they are legally liable (in the US)
- they are ethically responsible

EPA (and NOM Removal)

Potential to Save Lives

Unspecified potential for pinhole leak damages

EPA (and NOM Removal)

Potential to Save Lives

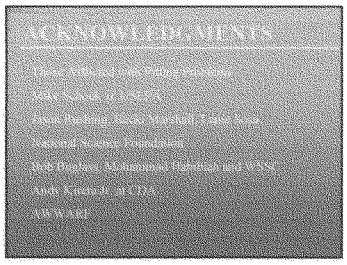
Leak damages probably billions of $ per year
Potential health consequences

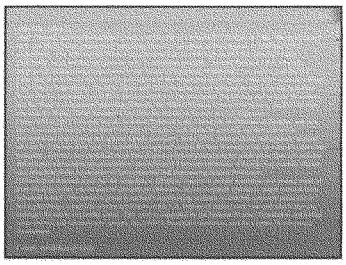
EPA HAS TO HELP CONSUMERS!!

AWWARF/AWWA
(representing water utilities)

What would it take to do better?

The cost of doing nothing


ACKNOWLEDGMENTS



Chairman TOM DAVIS. We're trying to figure what it would cost to do a reasonable study because we need defined science on this, right? And so I think you've identified some problems, and nobody has any answers. Will $200,000, that get you started on something like this?

Mr. EDWARDS. Yeah. If you wanted answers to this one issue, chloramines and lead——

Chairman TOM DAVIS. It's a national issue, right?

Mr. EDWARDS. Absolutely. $350,000. The program that I proposed to EPA back in April 2003 addressed the most urgent issues that were currently confronting us, and the total price tag for that was $7 million. And if you want a copy of that presentation, I can show you the——

Chairman TOM DAVIS. Can share that with us?

Mr. EDWARDS. The costs of this are billions and billions of dollars a year to consumers.

Chairman TOM DAVIS. I can take a look at what it's just going to cost the city of Washington now and everybody to go through this. I guess the old saying is, "You can pay me now, you can pay me later."

Mr. EDWARDS. Absolutely.

Chairman TOM DAVIS. Why is it worse after 1 minute? That's what I want to know.

Mr. EDWARDS. It has to do with the fact that is where the water is sitting in the lead pipes that are—plumbing materials that have the worst lead. So out by the service main, you have your lead service lines. You also have a type of brass known as NSF Section 8 Tested Brass, and this brass can contain up to 8 percent lead by weight, even though it's listed as lead-free in the Safe Drinking Water Act.

So at this 1-minute time, what you're really getting is the water that's been contacting the plumbing materials that have the worst lead in the D.C. system.

Chairman TOM DAVIS. OK. That's very revealing.

Mr. Olson, let me ask you. EPA needs additional authority to plug these loopholes, don't they? Or do they have them now?

Mr. OLSON. I think EPA has the authority they need to plug these loopholes. It's a question of whether they're willing to use the authority they have. For the emergency order, they could issue it today. For the change in the regulations, they would need to do that themselves.

The only problem with their current authority I think is the Lead Contamination Control Act, which goes to the schools-testing issue. Part of it was overturned by a court in the Acorn decision. It was ruled as unconstitutional, because it directly imposed requirements on States. Rather than saying, "We're going to withdraw your funding if you don't do this testing," it directly imposed the requirements on States. So that provision probably needs to be changed. It clearly needs to be changed.

Chairman TOM DAVIS. If you could pinpoint, though, for a national water infrastructure problem that you've highlighted, what legislative measures would you propose that you think make sense that don't go off the charts in costs? I mean, there is a cost-benefit factor.

Mr. OLSON. Well, the first step is clearly there is a need to address what I just mentioned, the schools issue. Second, we think that there is a need for water infrastructure funding. The funding that—there have been repeated studies by EPA and cities showing that the amount of funding that's available is inadequate to deal with the problem. So I think either appropriations or water infrastructure legislation would be necessary.

And finally, the whole issue of lead-free plumbing. We just heard that things defined as lead-free under Federal law are far from lead-free, and that needs to be changed as well.

Chairman TOM DAVIS. You were critical of the Corps of Engineers' decision to switch to chloramines to combat disinfection by products. How are these decisions by water suppliers regulated by EPA? Are there additional mechanisms and technical standards that you'd——

Mr. OLSON. Let me clarify. We do not oppose the use of chloramines. We think it's a Band-Aid, though. It doesn't go to the underlying problem, which is old-fashioned treatment. So there are EPA regulations that do regulate how much of these disinfection byproducts there are.

Our concern is that we have D.C. and a lot of other cities across the country that continue to use this outdated, really antiquated treatment technology that needs to be upgraded.

Chairman TOM DAVIS. Dr. Silbergeld, let me ask you, do you think that the lead action level of 15 parts per billion is appropriate?

Ms. SILBERGELD. Probably basically it is not, but certainly those of us in public health would rest a lot easier if we actually achieved that.

Chairman TOM DAVIS. How can we identify and treat those that are affected by lead exposure?

Ms. SILBERGELD. Well, since it seems very difficult to get a comprehensive and accurate assessment of drinking water supplies, and, as Dr. Edwards has pointed out, even the way in which we measure the actual exposures of residents over a day is not a simple matter, probably our best bet is to combine an emergency blood lead surveillance program similar to what EPA has done, for example, in smaller communities; but not necessarily to stay at that point, because blood lead only reflects relatively recent exposures. And, thus, for a family that perhaps may have stopped drinking water 6 months ago, this would not necessarily indicate that they had no risks. So, a very intensive surveillance.

Chairman TOM DAVIS. I'm trying to understand, does one glass of water go to affect you in a situation like this, or is it over a month, 2 months? I guess it all depends on what the levels are. I mean, what's been your experience in looking at that?

Ms. SILBERGELD. Well, it can be a very short period of time. For example, in the reports from the Harvard Medical School, for example, of cases of infants poisoned by lead from drinking water when the parents were mixing formula with drinking water, their actual toxic symptoms were induced after only a few months of exposure.

Chairman TOM DAVIS. Thank you very much.

Ms. Norton.

Ms. NORTON. Thank you, Mr. Chairman. Could I ask, many people are switching to bottled water. Is bottled water any better? Does it not have these problems?

Ms. SILBERGELD. Well, certainly in general there have been problems identified with bottled water, because the regulation of bottled water by FDA is certainly not complete. I would find it hard to believe that bottled water would have levels of lead as high as what's been reported in the newspaper.

Mr. EDWARDS. I'll second that.

Mr. MORAN. Would the gentlelady yield for just a moment? I heard this week that Dasani, which Coca-Cola bottling puts out, is actually London tap water. Is that true? There was a report in the London papers.

Mr. OLSON. I can report we did a report a couple of years ago looking at bottled water quality. We tested over 1,000 bottles. We also tested over 100 brands. Much of the bottled water in the U.S. is tap water. Some of it has been treated. So much of it has not. About 20 percent, was our estimate, is tap water.

In addition, we found no lead in all the tests that we did, no significant lead. We did find arsenic. We found bacteria. We found a variety of organic chemicals. Most of it was not a violation of the weak Federal rules, but there really isn't much of a Federal regulatory program for bottled water. FDA told us they had a single person regulating bottled water for the country at the time.

Ms. SILBERGELD. I would also like to speak to this issue of the filters. The filters, as has been noted, have a relatively short period of efficacy, but they also have a limited efficacy. When you have concentrations of lead in water above 200–300 parts per billion and much higher, no filter is going to remove that much lead so that I also find it rather disturbing to have the Health Department distributing these filters as some kind of suggestion that then all the water in the District would be safe to drink.

Ms. NORTON. Dr. Silbergeld, the problem I have is that while these agencies are figuring it out, something has to be done. And there are probably a limited number of options. Ever since the water scare in 1993, I've simply been buying water. I mean, they lost my confidence. Obviously, that's a very middle-class thing to do. What is it that the average person should be doing now?

Mr. EDWARDS. There's no doubt that the filters would dramatically reduce the amount of lead in water. In those two samples that were reported in the Post yesterday, over 40,000 micrograms per liter of lead, it is true that filter would not produce a water currently classified as safe under EPA regulations. That sample is a—it's very much the exception and not the rule.

For the vast majority of the samples that I have seen and that I have taken myself, Brita filters, other kinds of filters, would do a very satisfactory job in getting the lead out, but it's not, as she said, fool-proof.

Ms. NORTON. Well, would one thing to do, then, be with respect to adults where, according to Dr. Silbergeld's testimony there are significant risks, one might advise the filters—with respect to pregnant women and children under 6, would bottled water be more advisable than using filters? I mean, there's at least two or three

classes of people that we have to deal with in the meantime while we're trying to figure out what to do.

Ms. SILBERGELD. Well, the public health perspective on drinking water in this country from the very beginning has been that all water should be safe and healthful to drink, and that is why we have never permitted a dual system of water supply which, of course, has been in use in other countries where there's potable and nonpotable water. I'm very reluctant to endorse as a public health matter the idea of multiple sources of drinking water and have any assurance that would protect the public.

I must also say that I am not enthusiastic about the idea that one can eliminate the lead risks for nonpregnant women and other adults. Our paper, published in the Journal of the American Medical Association, found significant risks of clinical hypertension when blood lead levels went from 10 to 15 in adult women, not pregnant women, and this was the blood pressure of the women themselves.

I could not in good conscience tell you that it would be appropriate to allow anyone in the District of Columbia to be exposed to some of these levels.

I'd also like to point out that if these filters——

Ms. NORTON. But I have to stop you here. I really do have to stop you here, because we live in this world at this time and we have a population of 600,000 people that we have to deal with. And people look to public health experts not to give them the perfect solution, particularly when there is no perfect solution in sight, but to help us find at least—give some advice to the people who live here. So I'm not asking people to guarantee or warrant a solution here, but in the meantime we would appreciate your best advice.

I think the advice of Dr. Edwards on filters was practical, and that's what we—that's all we can do. We cannot create a perfect system overnight. We can't say to folks, well, we don't have any perfect system, so you're on your own.

Ms. SILBERGELD. I'm sorry if I left that impression. Please excuse me. I can only tell you that my own ethics tell me that I cannot tell someone that if they have 300 parts per billion in their drinking water, that putting it through a Brita filter is acceptable. And I believe when we have national emergencies in this country, like hurricanes and floods that affect thousands of people, we take the steps necessary to protect public health. And it goes against all my training as a public health professional to say anything less to the District of Columbia. I'm sorry.

Ms. NORTON. Dr. Edwards.

Mr. EDWARDS. I will say my own experiments in the lab have shown that even up to 1,000 parts per billion lead, if you use the simplest filters that are NSF-certified, that you will produce water usually below the 15 parts per billion.

Ms. NORTON. Again, we're going to look to see what kind of written plan they come up with. It does seem to me, because we have to live in the here and now, that the filter notion, assuming they are good filters on the one hand, might be advisable. I myself, again in this imperfect world, realizing that with pregnant women and children—it seems to me that the District of Columbia may have an obligation to distribute bottled water that is completely

lead free, since you're telling me that is the case in most bottled water.

Mr. Chairman, if you'll just let me ask two more questions, I'll be through for the day.

One is, Dr. Edwards, I noticed that you said that the—your slides were not taken in private homes, were not from private homes or from apartments. I asked the prior panel about apartments, because that's where most people in the District of Columbia live, not in private homes. And of course the testimony of—the WASA testimony, I believe, was that we don't think this is a problem in apartments.

I'd like your advice on that and whether what you saw—what you in fact derived was, in fact, in your view, typical for apartment homes.

Mr. EDWARDS. If you pressed them, I think they would admit that they haven't tested new homes and apartments.

Ms. NORTON. And apartments?

Mr. EDWARDS. Yeah. I think they have focused on the old homes with lead service lines, and they have simply not done effective testing of new homes or apartments. And in a letter I wrote to the U.S. EPA February 8th, and then another letter on February 10th, I warned them that it was wrong to assume this problem was confined to older homes. The worst problems with brass, the worst case for brass is newer homes.

And so if you assume that the brass is not a problem, you don't sample newer homes. And so I believe if you push the issue, you would discover that they haven't done a whole lot of sampling in new homes, much less done the type of sampling that's necessary to detect the problem, which is to get this profile as a function of time.

And if they have that data I would love to see it. But the fact of the matter is the data in Arlington concerns me because the worst lead in Arlington was from newer homes and it came out after first draw, according to what someone up there said today, and that confirms my worst fear about brass.

Ms. NORTON. All right. Finally clear this up for me, if you would, the brass, copper, lead issue. Is this just a lead issue or does any substance that we've been using tend to corrode and produce problems?

Mr. EDWARDS. Yes. There is not a perfect plumbing material out there. We learned long ago that lead was a good plumbing material in terms of how long it lasted but a bad plumbing material because it caused serious health problems. It was actually used in Roman times. But the fact of the matter is we have homes out there, brand-new homes with brass in it, that contains up to 8 percent lead. Lead pipes are obviously pure lead, there is no lead coming from copper.

Ms. NORTON. Brass and copper therefore don't have the same effects on public health, on the health of the individual?

Mr. EDWARDS. It's been assumed that the brass is not a significant problem and that's why they're not sampling these new homes. I am of the opinion that some of these brass devices that are out there are causing a serious problem.

Ms. NORTON. If they also have lead in them. But does the brass by itself cause a problem? Does copper by itself cause a problem?

Mr. EDWARDS. Most brass that you buy in the hardware store today has lead in it, even, "leadfree brass."

Ms. NORTON. What about copper?

Mr. EDWARDS. Copper does not have significant amounts of lead in it.

Ms. NORTON. Finally, Dr. Silbergeld, would that be your view about the risks from brass and copper?

Ms. SILBERGELD. Well, there can be some effects of copper, primarily on the aesthetic qualities of water but EPA does regulate copper concentrations. Brass has been shown, many types of brass and many fittings, to in fact leach lead into a system. So it's clearly a source of lead.

The other point I would like to note is the continued use or the continued availability of lead solders which are used to connect all kinds of metal piping. Those were banned by EPA, but not very effectively because of the known fact that those solders at the joints can come into contact with water.

Ms. NORTON. The chairman and I were discussing what may be necessary, the science itself seems to be insufficient to yield protection, the kind of protection that the public has a right to expect. One of the things we're discussing is whether or not we should go to a VA-HUD and try to get some significant research done here. In your view has the research been ongoing and done? Is anybody doing the basic scientific research to get at some of these problems you say exist even in the best of circumstances?

Mr. EDWARDS. I've been doing the research, unfunded, sometimes in my own house, for the last several years. I've pleaded with the EPA and other agencies to provide funding so that we can get answers to the questions that consumers have. And the reality is this is an area that has been ignored. I'll tell you why: It's a problem no one wants. No one wants the responsibility for what happens in people's homes. The utilities have traditionally said, "our responsibility ends at the property line." The EPA has quite frankly loathed to cross that line as well. And while I support the efforts that are being made to get EPA to study water infrastructure in this country, all of that money is directed at the mains. No one is talking about funding research or helping the consumers with their water infrastructure, no one is.

Ms. NORTON. Dr. Silbergeld.

Ms. SILBERGELD. I'd like to respond to your question in a different context. I think that one of the lessons from this event is that we have a tendency to look at water problems one at a time. So at one point in time we're concerned about lead levels in water and rules are promulgated that have impacts on the quality and nature of water, etc., to deal with that problem. Then we have a tremendous problem with pathogens in that water and we promulgate additional rules that have impacts on the quality of water and the manner in which we handle it. Then we have some concerns about disinfection byproducts and those elicit still other assessments and rules and regulations. All of these concerns are valid and important, but the problem is there is no ethos or perhaps directive that is clear and compelling under the Safe Drinking Water

Act or elsewhere to compel a holistic assessment of these problems. Because what we want is safe and healthful drinking water. And therefore we think we are optimizing a solution for one problem when it comes to the surface and we neglect the impacts on other problems to say nothing of the impacts on the infrastructure itself. So I would urge reconsideration of EPA's drinking water research program at least insofar as it relates to health to ensure that it takes a holistic approach.

Ms. NORTON. One wonders whether or not the research should be done outside of EPA. Mr. Chairman, I think we should look at whether the CDC, NIH, I don't know who should be doing this complicated research involving many different substances which may interact one another. Thank you, Mr. Chairman.

Chairman TOM DAVIS. Mr. Moran.

Mr. MORAN. Thank you, Mr. Chairman. Maybe the National Science Foundation, the Institute of Medicine, something. But our Public Health Director in Arlington has been asking, actually wondering out loud, "I know that 400 parts per billion is basically toxic but is 200, is 100?" 15 probably isn't but why did EPA choose that as the actionable level? We asked that and we really didn't get a conclusive answer. Apparently—Dr. Silbergeld, go ahead and respond. That was going to be an introduction to my question but please respond.

Ms. SILBERGELD. I was actually on the Science Advisory Committee at the time in which the recommendations, health based recommendations, were drafted that EPA would then utilize in devising its regulations. Our health-based regulation, our health-based recommendation for lead in drinking water was zero. The 15 parts per billion is therefore entirely a feasibility estimation and evaluation. And it was driven by a number of concerns, many of which are important that Delegate Norton raised which have to do with real world solutions to real world problems. I don't want to minimize them. But I do want to state very clearly that number was not based upon a health judgment. When pushed we suggested that perhaps one could go as high as 7.5 parts per billion in drinking water and still remain in an area of exposure that we at that time as health scientists felt comfortable with.

With respect to your questions about numbers, I've tried to provide you some numbers in my testimony based on the medical literature, which I have referenced, which will indicate that drinking concentrations as low as 30 to 50 are associated in studies with significant increases in blood lead levels that are sufficient to cause concern, certainly for pregnant women, for the fetus and the very young infant, probably also for hypertension in adults. So, yes, there is a considerable body of information.

If you would like me to amplify upon that, I will do it for you in terms of calibrating numbers that are reported on the basis of analysis and expected areas of health concerning.

Mr. MORAN. You know I don't imagine you buildup an immunity to lead in your system.

Ms. SILBERGELD. No, unfortunately not. King Mithridates tried the idea of taking metals in small amounts.

Mr. MORAN. Gold, I think.

Ms. SILBERGELD. He tried arsenic.

Mr. MORAN. The chairman suggested it gave him a magnetic personality but didn't extend his life. Our major concern now is for children because they're most vulnerable. I would assume the first thing we want to tell parents of infants is don't mix the baby formula with the tap water, particularly if you have—it hasn't been tested and you don't know for sure that it might not be contaminated with high levels of lead.

When you move beyond the home you go immediately to the schools. They have water faucets generally. That's how they normally get their water. Now, it doesn't give us any comfort even if it has been running for a while that is going to be any less potentially toxic to them. Did you—I don't know, are most water faucets of—are they—is it mostly copper piping in schools? Would you assume that? Is that a reasonable assumption?

Mr. EDWARDS. Yeah, most water faucets in schools themselves are safe. The problem that I foresee is downstream at some point you have brass. And at some point water contacting that brass is going to come to the water faucet. And whether that's significant or not we can't say because we don't have the data.

Mr. MORAN. Now, we think that this has been going on for about 3 years. So there would be some cumulative effect I guess. Does the body accumulate lead in its system? Some metals you would normally wash out but others tend to be retained within the system. What about lead?

Ms. SILBERGELD. Lead is accumulated in the body but, more importantly, the effects of continued exposure are cumulative. So that both the exposure you have at any one point in time is of concern. But continued exposures are of even greater concern.

Mr. MORAN. So if we had caught this, in other words, in the first 6 months and had been able to ameliorate it or change the corrosive nature of the decontaminants we were putting in, the chloramine, then 6 months wouldn't have been a problem for the most part unless it was an extraordinarily high level in some individual homes, is that accurate?

Ms. SILBERGELD. We would certainly have made an important and positive difference. I cite a study that was conducted in the western part of England in which interventions were made just as you describe to deal with water chemistry problems, and there by lowering drinking water lead they saw a lowering of blood lead levels in the population drinking that water.

Mr. MORAN. Now, since this has been going on for 3 years would you recommend that we do a very extensive, perhaps comprehensive testing of the blood levels in our children or what do we do now? What do we do from a public health perspective? Does anybody want to respond to that? What would you recommend?

Mr. EDWARDS. Well, from an engineering perspective my main concern is to stop the damage now, stop further damages.

Mr. MORAN. You think changing from chloramine and putting in phosphates or something would stop the damage?

Mr. EDWARDS. Well, I am focused more on the short term, here and now issue. First off that's why I spend so much time trying to get the flushing advice changed from something that was wrong to something that makes a little sense.

Mr. MORAN. So you want them to flush for 5 minutes.

Mr. EDWARDS. If they're going to drink water they have to flush it to the point that lead is reduced to lead levels—some of D.C.'s own WASA's levels shows 10 minutes is necessary.

Mr. MORAN. 10 minutes. I don't think that's a practical solution.

Mr. EDWARDS. So then you have the filters. Let me point out two other things that concern me in the here and now. This partial lateral replacement program, is it helpful or not? And if it's not helpful, it's harmful. We better stop it.

Mr. MORAN. Could be harmful because of what—the new soldering or whatever?

Mr. EDWARDS. Because of the fact that you're replacing part of an old lead pipe with a brand new copper pipe. Our research at Virginia Tech has shown that in essence what you are doing is you are making a strong battery there. The brand new copper drives corrosion of the old lead. And it's very likely that replacing part of the lead service line is going to increase lead levels, not make them better. Now, I wish EPA could tell you they have data showing that their partial lead replacement program is actually having a helpful effect. Quite frankly I doubt that they have that data. The data I've seen has scared me. The two worst levels you saw in the Post the other day, 40,000 parts per billion, 20,000 parts per billion, these were after a partial lead replacement occurred. So I'm just saying we can spend $351 million to replace all of WASA's lead service laterals and leave this problem worse than it was. And let's get data to make sure that what we're doing with that money is beneficial, because, quite frankly, I think it could be making things worse.

And the other point I would make is do we know that this is not a problem in new homes? Do we know that this is not a problem in apartments? Those folks have not been warned yet. So yes, we need to proceed on all fronts but I'm sitting here saying we have to stop the damage. Stop the damage that's occurring now.

Mr. MORAN. I understand. Is this serious enough that we need to do public health testing of large portions of the population? I'm not going to ask any further questions but I'd be interested in the answer.

Ms. SILBERGELD. Yes. In response to your question I do believe that D.C. should significantly increase their testing of young children. I noted that, as published in the CDC reports of last year, in fact the last time that D.C. reported on its lead screening program, they were only screening 30 percent of children under 6 years of age to begin with. So the very first thing would be to get an effective and comprehensive screening of children and focusing on the youngest because frequently this testing gets biased toward when the child enters elementary school. But it would be extremely important to catch children through the baby clinics, through day care centers and any other means of—I mean a 30 percent screening rate is unacceptable regardless of any specific lead problem. But in the situation that you have here, there is an urgent need to increase that.

Mr. MORAN. Thank you, Mr. Chairman.

Chairman TOM DAVIS. Mr. Van Hollen.

Mr. VAN HOLLEN. Thank you, Mr. Chairman. I agree with Mr. Edwards, you're absolutely right. We want no one to spend millions

of dollars to do a partial fix that either does nothing or either makes things worse. That gets back to the root cause of the issue in D.C. and potentially elsewhere. I want to get back to the issue of the effect of chloramines. Because Mr. Olson, as I read your testimony, there are lots of cities that have been having problems with lead, not necessarily the intensity of the problem here, but you list a whole number of cities in your testimony. Is there any consensus in the scientific community that the cause of the problem in any of those cities was a result of leaching or corrosion from the chloramine?

Mr. OLSON. The sad answer to that question is I don't think there is any single person that can answer that question. It should be EPA that would have an answer to that immediately, but there is a huge problem with EPA collecting that information. And I agree with you on the lead service line issue. I think one thing that hasn't been brought out about the lead service lines in the district I attached to my testimony articles from the Washington Post in 1893 and 1895 where the debate was going on in the District as to whether to widely adopt lead service lines. The decision was made by the Federal overseers of the District's water supply at that time to install its service lines city wide. Now it shouldn't be up to the home owner to have to replace that little part of their lead service line that the city decided to impose or the Federal Government decided to put in there, and thereby if they don't replace it, make the problem worse. WASA ought to be replacing the entire lead service line.

Mr. VAN HOLLEN. Mr. Chairman, my green light never went on but if that's all right, let me just——

Chairman TOM DAVIS. You can take a hint pretty well there.

Mr. VAN HOLLEN. On the chloramine issue, because we've been talking all morning. We had a panel up there and there have been—the suggestions in the media are that the chloramine is a very possible cause of this. And yet as I understand it, there is—in listening to testimony from the Army Corps, there is no consensus yet in the scientific community. I am just trying to get the facts. So there is a substitute to chloramine that addresses the byproduct issue that led to chloramine over chlorine. And as an alternative where there is consensus if we were to implement today—and I ask that question, Mr. Olson, because you have a recommendation in your testimony that talks about this other alternative, orthophosphate. On the other hand, Dr. Edwards suggests in his testimony that before doing that more experimental data is needed. Is there a consensus that there's an alternative to chloramine that also addresses the disinfection byproduct rule that everyone could agree that we would implement today? We don't have to resolve the question of whether chloramine is the cause but we know there is an alternative that meets all the requirements?

Mr. OLSON. Well, it's a complicated question. With respect to—chloramine is added, it is part of the disinfection process, it's added to reduce the disinfection byproducts. There are alternatives, alternative ways that are not going to cause disinfection byproducts to disinfect your water. The Corps of Engineers has resisted other alternatives because they're more expensive, but they include going to activated carbon filtration and ozone or ultraviolet light to dis-

infect then. You could add a residual disinfectant. The byproducts would be much lower. Before you do that you would have to look at what the impact on corrosion control would be. So it may be that the long term solution here is to go to modern treatment, as much of Europe has, with those alternative disinfectants and activated carbon and perhaps orthophosphate, perhaps something else. I think it's really important that what was mentioned by Delegate Norton, we need some short-term fix for those that are being exposed today. We couldn't agree more. The short-term fix is different than the long-term fix. A short-term fix might be filters that are NSF certified or whatever, something immediately that citizens can use. They have to be maintained. We don't hear the discussion from WASA about that. You can't install a filter and walk away. They can make matters worse if you don't maintain them. It's absolutely critical. It's only a short-term fix. Over the long run you have to have water that is delivered to every citizen of the District and in the country that is safe for any child or any person to drink. That's got to be where we're headed. These others are short-term fixes.

Mr. VAN HOLLEN. Let me ask, Dr. Edwards, you suggest in your testimony I think that you go back, utilities be allowed to stick to chlorine. Now as I understand it we went from chlorine to chloramines because of the byproduct issue. Wouldn't that be a problem if you just went back to chlorine?

Mr. EDWARDS. Well, what's happened here is the EPA has decided the disinfection byproducts are more important, if you will, than the potential adverse consequences on home plumbing and lead. WASA I think was doing OK with free chlorine under the old disinfection byproducts regulations, but what's happening, let me just say this, the new regulations are so tight that utilities are having to switch to chloramines whether they want to or not in order to meet disinfection byproducts requirements. So even though they have protested this, some in very strong terms, they have no choice because chlorines are a national primary drinking water standard. As you have seen, lead only has an action limit which in many cases means no action. There is no maximum amount of lead allowable in water. There are utilities out there that have exceeded the action limit forever, and there is no plan to get them below the action limit. So action limit can mean no action at all.

Mr. VAN HOLLEN. Thank you, Mr. Chairman.

Chairman TOM DAVIS. Thank you very much. I have a final question for all three of you. Do you think the timeframe that EPA has laid out for implementing remedial steps is reasonable? Do you think there are interim solutions that could be implemented prior to September 1st?

Mr. OLSON. I think their response is wholly inadequate and that there needs to be an immediate emergency order issued with specific deadlines to move forward with each one of these steps. That doesn't mean rushing into things but it means some deadlines, because if we don't have enforceable deadlines our history in this city with the water supply is things—as soon as it drops off the front page of the Washington Post things tends to get sloughed off.

Chairman TOM DAVIS. OK.

Ms. SILBERGELD. When I went to the EPA water site they said, and this is a quote from EPA, "lead concentrations of 40 parts per billion or higher poses an imminent and substantial endangerment to the health of children and pregnant women." Well, if imminent and substantial endangerment doesn't mean that you use emergency powers, I don't know what does.

Mr. EDWARDS. Well, my only concern is what I already expressed, and that is the time line they put forth seems reasonable but they did not—again stop the damages that are occurring as we speak. The partial lead service line replacement program, is it beneficial, yes or no? This is an answerable question. If it is not beneficial, if it's harmful, let's stop it. And also we've got to get at this issue in new homes and apartments. These people have not been told anything yet. And if there is a problem, they have to be told.

Chairman TOM DAVIS. Well, thank you very much.

Mr. MORAN. Just for a real quick question. There is a professor at Dartmouth that suggested here that it's conceiveable that the problem is not chloramines but it could be industrial grade flouride that is being used at the aqueduct. Is that possible?

Mr. EDWARDS. We have directly tested that hypothesis in the lab and proven that flouride as it is dosed at the aqueduct does not have any significant effect on lead leaching. I didn't bring those results in because the chloramine results are just so clear.

Mr. MORAN. Thank you.

Chairman TOM DAVIS. Thank you all very much. I want to just thank the witnesses for being here. You have added greatly to this. I think you have given us some thought on some other congressional actions that may take place, particularly on some of the studies that have been suggested in regulatory review. The committee stands adjourned.

[NOTE.—Additional information submitted for the hearing record is on file with the committee.]

[Whereupon, at 1:30 p.m., the committee was adjourned.]

[Additional information submitted for the hearing record follows:]

Statement of the

Honorable Barbara Favola

Chairman, Arlington County Board

Mr. Chairman, I am Barbara Favola, Chairman of the Arlington County Board. I am grateful for the opportunity to submit testimony to your committee with regard to the issue of lead in water appearing in parts of the Washington metropolitan area, especially your committee's focus on the potential role of additives required by federal regulations.

We have key responsibilities to determine the extent of this problem, the level of risk it might create—especially for children in our community, what might have created the problem, and what steps we can take to correct it. At this time, Arlington County is aggressively testing schools, day care centers and water distribution points. Arlington is committed to gather the necessary information to understand this problem. We are equally committed to keeping our residents fully informed every step of the way.

We hope, through your help, Mr. Chairman, to determine whether changes in chemicals used by the federal government to protect water quality in the Potomac River might have inadvertently triggered this problem. The public also needs to better understand what an EPA standard actually means with respect to one's health risk. EPA must explain in more detail the science behind a designation of an "EPA actionable level" and other levels that indicate a health risk..

Even though Arlington and Falls Church share a common water supply with the District of Columbia supplied by the U.S. Army Corps of Engineers, the initial concerns about water/lead issues in the District centered entirely around lead service lines. Arlington has no known lead service lines.

Moreover, Arlington is and has been fully compliant with EPA drinking water rules and regulations, and has tested regularly with no results indicating a problem. As soon as it became known, however, that there might be a different problem, Arlington initiated testing. As soon as Arlington had even preliminary test results, the County notified this community. Our commitment is to be tas open as possible.

As soon as we learned that the problem might be other than lead lines, Arlington began to collect water samples from a small number of homes. The recent water sampling is being conducted earlier than the required testing this summer, due to regional concerns about lead levels. Preliminary testing of eight homes in Arlington has found elevated levels of lead in water in five of them, according to test results. Arlington is conducting expanded testing of the homes found with higher lead levels, as well as more testing to an expanded sample pool. The results are preliminary. We have initiated additional testing, including at our schools.

Beyond that, it's far too early to say more.

This was entirely voluntary and aggressive on our part. We began the effort as soon as there was a question of water chemistry potentially reacting with lead solder.

Even though this sampling is far too small to be conclusive, Arlington is and will take every step to ensure careful and aggressive protection of public health.

As a result of our concerns, we have advised our community that children younger than 6 and pregnant women should avoid drinking water with elevated lead levels.

For any residents who are concerned about their water supply:

- The Environmental Protection Agency advises flushing the faucet for 60-90 seconds if the home water supply has been idle for 6 hours or more.
- Cook only with cold water.
- If you also choose to use a filter, follow these three rules: 1] choose one designed for the specific filtration desired; 2] make sure the filter is approved by the National Sanitation Foundation, and 3] maintain the filter as directed.

These are simple precautions that the Arlington Public Health Department advises at this time.

Arlington's handling of the water quality issue is evidence of its commitment to public safety, just as this committee's leadership will be critical to ensure a comprehensive and coordinated effort.

Thank you.

February 24, 2004

FOR IMMEDIATE RELEASE

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202-787-2200

EXTENSIVE SCHOOL WATER TESTING PROGRAM CONFIRMS LOW LEVELS OF LEAD IN DCPS SCHOOLS AND FACILITIES

(Washington, DC) The results of an extensive sampling and analysis program conducted February 14 through February 19, 2004, by the District of Columbia Water and Sewer Authority (DCWASA) in cooperation with the District of Columbia Public Schools (DCPS) shows that the vast majority of the DCPS and facilities have extremely low levels of lead in the water provided by the DCWASA Water Distribution System. Every occupied public school in the District was tested as well as administrative and shop facilities.

The results show that 98.94 % or 744 of the total 752 samples contained either no detectable quantities of lead or levels below the Environmental Protection Agency (EPA) "action level" for residences of 15 parts per billion (ppb). Eight samples tested above the 15 ppb threshold. The test procedure was capable of detecting over 2 ppb of lead.

"Given the widespread nature of the tests taken throughout the District, and the fact that the tests showing elevated levels were so isolated, this tells us that the lead levels in WASA's main service lines to public schools and facilities have lead levels well below the EPA acceptable levels," said Jerry Johnson, WASA General Manager. "But no matter how isolated, any case where the tests show higher lead levels is of concern. Where tests showed problems with a small number of plumbing fixtures, DCPS has taken prompt action to address the concern."

Seven hundred fifty-two samples were collected from 154 schools and school facilities identified by DCPS. The sampling methodology called for 5 samples to be collected at each location – three from drinking fountains and two from sinks. Water was run from each fixture for ten minutes before sample collection to obtain a "snapshot" of the water delivered by each building's internal plumbing system. An additional 22 "first draw"

samples were collected from randomly selected locations to assess the contribution of plumbing fixtures such as faucets and drinking fountains, and ALL of these samples yielded results below 15 parts per billion (ppb) of lead, with 11 of the samples below the 2 ppb limit of detection.

The samples were analyzed for DCWASA by Martel Laboratories JDS, Inc., of Baltimore, Maryland, a water quality laboratory certified by the Maryland Department of Health and Mental Hygiene for microbiological and chemical examination of drinking water. Martel followed EPA-specified methods in conducting the analyses by inductively coupled plasma-Mass Spectrometry. A full report containing the results for each fixture sampled at each location is attached.

The eight locations with lead levels above 15 ppb and the actions taken are summarized below:

-A drinking fountain at Choice Academy at Douglass, 2600 Douglass Place, SE, yielded a water sample analyzed at 43 ppb lead. The fountain has been removed from service for replacement by DCPS. All other samples taken at Choice Academy -- two other fountains and two sinks -- that were tested at the same time yielded samples testing below the 2 ppb level of detection.

- A sink in the Teacher's Lounge at Kenilworth Elementary, 1300 44th St, NE, yielded a water sample analyzed at 109 ppb lead. Use of this sink has been suspended by DCPS pending a review of its condition. Bottled water is being provided for staff use. All other samples taken at Kenilworth --three drinking fountains and one sink -- tested at the school at the same time yielded samples testing below the 2 ppb level of detection.

- A sink in Room 109 at Eliot Jr. High School, 1830 Constitution Ave., NE, yielded a water sample analyzed at 50 ppb lead. Use of this sink has been suspended by DCPS pending a review of its condition. All other samples taken at Eliot -- three drinking fountains and one sink -- tested at the school at the same time yielded samples testing below the 2 ppb level of detection.

- A cafeteria sink at Bell Multicultural Sr. High School, 3145 Hiatt Place, NW, yielded a water sample analyzed at 160 ppb lead. Use of this sink has been suspended by DCPS pending a review of its condition. All other samples at Bell -- three drinking fountains and an additional cafeteria sink -- tested at the school at the same time yielded samples testing below the 2 ppb level of detection.

- A drinking fountain at Dunbar Sr. High School, 1301 New Jersey Ave., NW, yielded a water sample analyzed at 22 ppb lead. The fountain has been removed from service for replacement by DCPS. All other samples at Dunbar were below the EPA residential action level of 15 ppb. Specifically, two sinks tested at the school at the same time yielded samples testing below the 2 ppb level of detection, and two other fountains yielded samples testing at 3.9 ppb and 10 ppb.

-A sink in the kitchen at H.D. Woodson Sr. High School, 5500 Eads St., NE, yielded a water sample analyzed at 110 ppb lead. Use of this sink has been suspended by DCPS pending a review of its condition. All other samples taken at Woodson -- three drinking fountains and one sink -- tested at the school at the same time yielded samples testing below the 2 ppb level of detection.

- A drinking fountain at Penn Center, 1709 3rd St., NE yielded a water sample analyzed at 18 ppb lead. The fountain has been removed from service for replacement by DCPS. All other samples taken at the Penn Center --two fountains tested at the site at the same time yielded samples testing below the 2 ppb level of detection, and two sinks yielded samples testing at 2.8 ppb and 6.8 ppb, respectively.

- A sink in the cafeteria Ballou Sr. High School, 3401 4th St., SE, yielded a water sample analyzed at 16 ppb lead. Use of this sink has been suspended by DCPS pending a review of its condition. All other samples taken at Ballou --three drinking fountains and one sink -- tested at the school at the same time yielded samples testing below the 2 ppb level of detection.

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